Final Report

Environmental Assessment: Landscape Multiple Areas at Grand Forks Air Force Base

Prepared by

Grand Forks Air Force Base, North Dakota

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FINDING OF NO SIGNIFICANT IMPACT
FOR
LANDSCAPE MULTIPLE AREAS

AGENCY: Department of the Air Force

PROPOSED ACTION: The United States Air Force (USAF) proposes to landscape multiple areas on Grand Forks Air Force Base (AFB), North Dakota.

Purpose and Need: The purpose of the proposed action is to landscape multiple facilities and areas at Grand Forks AFB The areas are listed in a document called the "Green Plan". The goal of the "Green Plan" is to improve the quality of life and increase community spirit and pride.

Erosion control is necessary to prevent the loss of topsoil, and improve the general appearance of the improved areas of the base. Site improvements in the improved areas on base are necessary to create a unified city-like environment that enhances the quality of life. A need exists for a healthy, pest and disease free, thriving, attractive, and professional appearance of exterior landscapes.

The objectives for the proposed action is to integrate all management activities in a way that sustains, promotes, and restores the health and integrity of the environment. The plan would include ecosystem management and biodiversity concerns in the design and planning of each project, maximizing use of native species. The project would ensure site grading, which not only provides drainage for the newly developed area, but does not hinder drainage of adjacent areas.

A related EIAP document is the Environmental Assessment and FONSI, RCS #2004-339, for the Integrated Natural Resources Management Plan (INRMP). It includes wetland delineation, tree arboretum and Prairie View Nature Preserve maintenance and native praire restoration, butterfly garden, urban tree inventory, riparian river bank stabilization, shelterbelt rejuvenation, living snow fences, habitat assessment, noxious weed eradication, bird houses and surveys, beaver control; threatened, endangered and sensitive species monitors; hay lease maintenance, burn plan, mosquito control, multipurpose base trail loop, Bird Aircraft Strike Hazard (BASH) reduction, deer bowhunting, Turtle River fishing and picnicking, golf course cover, public awareness signs and displays, and geographic information system (GIS) incorporation. Multiple landscape projects of the past have been categorically excluded, based on the EA/FONSI # 1999-052 Landscape Dorm Community.

Grand Forks AFB must decide whether to landscape multiple areas on this base.

ALTERNATIVES CONSIDERED

No Action Alternative 1: The no action alternative would be to leave the facility areas as they are. Soil erosion will continue. Physical features of the base complex will continue to deteriorate and not provide amenities common to similar environments in the civilian

community. Morale, productivity, and career satisfaction of the professional force, and respect of retirees and dignitaries visiting Grand Forks AFB will be adversely affected.

Proposed Action 2: Plant trees, shrubs, annuals, perennials, and accent plants by contract. Install barrier fabric, edging, inorganic and organic mulch, and all other associated items for a complete landscaping project. Install irrigation systems. Incorporate landscape design services. Fertilize and add soil amendments. Perform landscape establishment. Perform erosion control by sodding the improved area of the base. Exterior site improvements would include tilling, topsoil, soil additives, fine grading, and installation of sod. Install sod and other turf. Perform site preparation. Landscape grading. Furnish all plants, labor, equipment and related materials by contract. See attached Green Plan in Appendix E for listing and description of individual landscape projects.

Alternative Action 3: Plant trees, shrubs, annuals, perennials, and accent plants in-house by CES.

ENVIRONMENTAL CONSEQUENCES

Air Quality - Air Quality is considered good and the area is in attainment for all criteria pollutants. Positive impacts to air quality would result because of landscaping activities. Trees act as filtering mechanisms and remove significant levels of carbon dioxide from the air.

Noise - The equipment used in landscaping would create additional noise. The increase in noise would be negligible and only occur during equipment operation.

Wastes, Hazardous Materials, and Stored Fuels - The increase in hazardous and solid wastes from landscaping would be temporary. Solid waste debris would be disposed of in an approved location, such as the Grand Forks Municipal Landfill. Inert construction debris would be disposed at an approved location, such as Berger Landfill.

Water Resources – Provided best management practices (BMPs) are followed, there would be minimal impacts on stormwater, ground water and water quality. The proposed action would have no impact on wastewater.

Biological Resources – BMPs and control measures, including storm drain covers and covering of stockpiles, would be implemented to ensure that impacts to biological resources be kept to a minimum. BMPs would be required to prevent the spread of noxious weeds, minimize soil erosion, and promote the establishment of native plant species. Positive impacts to natural resources would result because of landscaping activities. Planting trees and shrubs shall improve species diversity and protect the base against blight and disease. Trees provide shelter from wind, rain, and hot summer sun. Berms can help define a space and direct or intercept water run-off.

Socioeconomic Resources - This action would have a minor positive effect on the local economy. Secondary retail purchases would make an additional contribution to the local

communities. The implementation of the proposed action, therefore, would provide a short-term, beneficial impact to local retailers during the installation phase of the project.

Cultural Resources - The proposed action has little potential to impact cultural resources. In the unlikely event any such artifacts were discovered during the construction, the operator or contractor would be instructed to halt operations and immediately notify Grand Forks AFB civil engineers who would notify the State Historic Preservation Officer.

Land Use - The proposed operation would not have an impact on land use, since the areas would remain designated for the original use.

Transportation Systems – The proposed operation would have minor adverse impact to transportation systems on base due to vehicles traveling to and from the landscaped areas.

Airspace/Airfield Operations - The proposed action would not impact aircraft safety or airspace compatibility.

Safety and Occupational Health – Participants on the installation must wear appropriate personnel protective equipment (PPE).

Environmental Management – The proposed action would not impact ERP Sites. BMPs would be implemented to prevent erosion. The advantages of a professionally installed and maintained landscape can lower heating and cooling costs, block the winter wind, absorb the summer heat , provide shelter from wind, rain, and the hot summer sun, lower noise levels, enhance pleasant views, add color and visual contrast, prolong the life of pavement, increase the value, usability, and aesthetics of your facility and reflect positively on the U.S. Air Force.

Environmental Justice - EO 12898 requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. There is no minority or low-income populations in the area of the proposed action or alternatives, and, thus, there would be no disproportionately high or adverse impact on such populations.

A copy of the EA is available at the Grand Forks AFB Public Affairs office. All interested agencies and persons are invited to submit written comments within thirty days from the public notice. The public notice appeared in the Grand Forks AFB Leader and the Grand Forks Herald. Comments were received from the North Dakota Department of Health, U.S. Fish and Wildlife Service, N.D. Game and Fish, and N.D. State Historical Society. None of the comments required changes to the proposed action of the discussion of environmental consequences in the EA.

No adverse environmental impact to any of the areas identified by the AF Form 813 is expected by the proposed action, landscaping multiple areas.

CONCLUSION: Based on the Environmental Assessment performed for landscaping multiple areas at Grand Forks AFB, no significant environmental impact is anticipated from the proposed

action. Based upon this finding, an Environmental Impact Statement is not required for this action. This document and the supporting AF Form 813 fulfill the requirements of the National Environmental Policy Act (NEPA), the Council of Environmental Quality (CEQ) regulations implementing NEPA, and Air Force Instruction 32-7061, which implements the CEQ regulations.

WAYNE A. KOOP, R.E.M., GM-13
Environmental Management Flight Chief

Date: 31MAR06

Cover Sheet

Agency: United States Air Force (USAF)

Action: The action proposes to landscape multiple areas at Grand Forks Air Force Base (AFB), North Dakota.

Contacts: 319 CES/CEVA
525 Tuskegee Airmen Boulevard
Grand Forks AFB, ND 58205

Designation: Draft Environmental Assessment (EA)

Abstract: This draft EA has been prepared in accordance with the National Environmental Policy Act, and assesses the potential environmental impacts to landscape multiple areas, located on Grand Forks Air Force Base in Grand Forks County, North Dakota. Resource areas analyzed in the EA include Air Quality; Noise; Wastes, Hazardous Materials, and Stored Fuels; Water Resources; Biological Resources; Socioeconomic Resources; Cultural Resources; Land Use; Transportation Systems; Airspace/Airfield Operations; Safety and Occupational Health; Environmental Management; and Environmental Justice.

In addition to the Proposed Action, the Alternative Action and the No Action Alternative were analyzed in the EA. The EA also addresses the potential cumulative effects of the associated activities along with other concurrent actions at Grand Forks AFB and the surrounding area.

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ACRONYMS, ABBREVIATIONS, AND TERMS

AAM	Annual Arithmetic Mean
ACM	Asbestos Containing Material
AFB	Air Force Base
AFI	Air Force Instruction
AICUZ	Air Installation Compatible Use Zone
AMC	Air Mobility Command
APZ	Accident Potential Zone
ARPA	Archeological Resource Protection Act
ARW	Air Refueling Wing
AST	Above Ground Storage Tank
Ave	Avenue
BASH	Bird Aircraft Strike Hazard
Bldg	Building
Blvd	Boulevard
BMP	Best Management Practice
BMX	Bike Motocross
BOD	Biochemical Oxygen Demand
CAA	Clean Air Act
CDC	Child Development Center
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Civil Engineering Squadron
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWA	Clean Water Act
dB	decibel
dBA	Decibels Adjusted
DNL	Day-Night Average A-Weighted Sound Level
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	Environmental Restoration Program
ESA	Endangered Species Act
F	Fahrenheit
FEMA	Federal Emergency Management Agency

FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
ft	Feet
ft^3/s	feet cubed per meter
GFAFB	Grand Forks Air Force Base
GPP	Green Procurement Program
HAP	Hazardous Air Pollutants
hr	Hour
H_2S	Hydrogen Sulfide
IAW	in accordance with
IRP	Installation Restoration Program
INRMP	Integrated Natural Resources Management Plan
LT	Long-Term
MBTA	Migratory Bird Treaty Act
MFH	Military Family Housing
mph	Miles Per Hour
MSDS	Material Safety Data Sheet
MSL	Mean Sea Level
$\mu g/m^3$	Micrograms Per Meter Cubed
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
ND	North Dakota
NDAAQS	North Dakota National Ambient Air Quality Standards
NDAC	North Dakota Administrative Code
NDDH	North Dakota Department of Health
NDPDES	North Dakota Pollutant Discharge Elimination System
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Act
NHPA	National Historic Preservation Act
NO_X	Nitrogen Oxides
NO_2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
O_3	Ozone
OSHA	Occupational Safety and Health Act
OWS	Oil Water Separator

P2	Pollution Prevention
Pb	Lead
PCS	Petroleum-Contaminated Soil
PM_{10}	Particulate Matter 10 Microns in Diameter
$PM_{2.5}$	Particulate Matter 25 Microns in Diameter
POL	Petroleum Oil Lubricant
ppm	Parts Per Million
PSD	Prevention of Significant Deterioration
QA/QC	Quality Assessment and Quality Control
RACM	Regulated Asbestos Containing Materials
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RV	Recreational Vehicle
SAGE	Strategic Air Ground Equipment
SAIC	Science Applications International Corporation
SARA	Superfund Amendments and Reauthorization Act
SO_2	Sulfur Dioxide
SO_X	Sulfur Dioxide
St	Street
ST	Short-Term
SWMU	Solid Waste Management Unit
tpy	Tons Per Year
TSCA	Toxic Substance Control Act
TSI	Thermal System Insulation
US	United States
USACE	United States Army Corps of Engineers
USAF	United States Air Force
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

The United States Air Force (USAF) proposes to landscape multiple areas on Grand Forks Air Force Base (AFB), North Dakota.

Purpose and Need: The purpose of the proposed action is to landscape multiple facilities and areas at Grand Forks AFB The areas are listed in a document called the "Green Plan". The goal of the "Green Plan" is to improve the quality of life and increase community spirit and pride.

The Green Plan includes projects JFSD200509 Landscape Steen Blvd, JFSD200336 Landscape/Screen Community Area, JFSD200510 Landscape Holzapple and Tuskegee, JFSD200525 Landscape Holzapple St East Side, JFSD200536 Landscape Honor Guard, JFSD980023 Erosion Control Base Wide, JFSD200410 Landscape Post Office, JFSD200512 Landscape Family Support, JFSD200526 Landscape Child Development Center, JFSD200511 Landscape Library, JFSD200538 Landscape Bowling Center, JFSD200539 Landscape Community Activities Center, JFSD200528 Landscape Tuskegee Airmen Blvd, JFSD200533 Landscape G St, JFSD200530 Landscape Dorm Area East Side, JFSD200529 Landscape 7th Ave, JFSD200447 Landscape Pavilion, JFSD980023P2 Erosion Control Base Wide, JFSD200531 Landscape Eielson St, JFSD200537 Landscape Vet Clinic, JFSD980023P3 Erosion Control Base Wide, JFSD200532 Multi-use Trail Landscape Improvements, JFSD200488 Landscape/Screen RV Lot, JFSD539333 Landscape Multi-use Recreation Area, JFSD200534 Landscape MSS/Finance/Comm, JFSD200513 Landscape Network Control Center, and JFSD980023P4 Erosion Control Base Wide.

Erosion control is necessary to prevent the loss of topsoil, and improve the general appearance of the improved areas of the base. Site improvements in the improved areas on base are necessary to create a unified city-like environment that enhances the quality of life. A need exists for a healthy, pest and disease free, thriving, attractive, and professional appearance of exterior landscapes.

The objectives for the proposed action is to integrate all management activities in a way that sustains, promotes, and restores the health and integrity of the environment. The plan would include ecosystem management and biodiversity concerns in the design and planning of each project, maximizing use of native species. The project would ensure site grading not only provides drainage for the newly developed area, but does not hinder drainage of adjacent areas.

Grand Forks Air Force Base must decide whether to landscape multiple areas on Grand Forks AFB.

No Action Alternative 1: The no action alternative would be to leave the facility areas as they are. Soil erosion will continue. Physical features of the base complex will continue to deteriorate and not provide amenities common to similar environments in the civilian community. Morale, productivity, and career satisfaction of the professional force, and respect of retirees and dignitaries visiting Grand Forks AFB will be adversely affected.

Proposed Action 2: Plant trees, shrubs, annuals, perennials, and accent plants by contract. Install barrier fabric, edging, inorganic and organic mulch, and all other associated items for a complete landscaping project. Install irrigation systems. Incorporate landscape design services. Fertilize and add soil amendments. Perform landscape establishment. Perform erosion control by sodding the improved area of the base. Exterior site improvements would include tilling, topsoil, soil additives, fine grading, and installation of sod. Install sod and other turf. Perform site preparation. Landscape grading. Furnish all plants, labor, equipment and related materials by contract. See attached Green Plan in Appendix E for listing and description of individual landscape projects.

Alternative Action 3: Plant trees, shrubs, annuals, perennials, and accent plants in-house by CES.

Impacts by Resource Area

Air Quality - Air Quality is considered good and the area is in attainment for all criteria pollutants. Positive impacts to air quality would result because of landscaping activities. Trees act as filtering mechanisms and remove significant levels of carbon dioxide from the air.

Noise - The equipment used in landscaping would create additional noise. The increase in noise would be negligible and only occur during equipment operation.

Wastes, Hazardous Materials, and Stored Fuels - The increase in hazardous and solid wastes from landscaping would be temporary. Solid waste debris would be disposed of in an approved location, such as the Grand Forks Municipal Landfill. Inert construction debris would be disposed at an approved location, such as Berger Landfill.

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Cultural Resources - The proposed action has little potential to impact cultural resources. In the unlikely event any such artifacts were discovered during the construction, the operator or contractor would be instructed to halt operations and immediately notify Grand Forks AFB civil engineers who would notify the State Historic Preservation Officer.

Land Use - The proposed operation would not have an impact on land use, since the areas would remain designated for the original use.

Transportation Systems – The proposed operation would have minor adverse impact to transportation systems on base due to vehicles traveling to and from the landscaped areas.

Airspace/Airfield Operations - The proposed action would not impact aircraft safety or airspace compatibility.

Safety and Occupational Health – Participants in the installation must wear appropriate personnel protective equipment (PPE).

Environmental Management – The proposed action would not impact ERP Sites. BMPs would be implemented to prevent erosion. The advantages of a professionally installed and maintained landscape can lower heating and cooling costs, block the winter wind, absorb the summer heat , provide shelter from wind, rain, and the hot summer sun, lower noise levels, enhance pleasant views, add color and visual contrast, prolong the life of pavement, increase the value, usability, and aesthetics of your facility and reflect positively on the U.S. Air Force.

Environmental Justice - EO 12898 requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. There is no minority or low-income populations in the area of the proposed action or alternatives, and, thus, there would be no disproportionately high or adverse impact on such populations.

1.0 PURPOSE OF AND NEED FOR PROPOSED ACTION

This Environmental Assessment (EA) examines the potential for impacts to the environment resulting from landscaping multiple projects on Grand Forks Air Force Base (AFB). As required by the National Environmental Policy Act (NEPA) of 1969, federal agencies must consider environmental consequences in their decision making process. The EA provides analysis of the potential environmental impacts from both the proposed action and its alternatives. The proposed action was described in a planning document named the "Green Plan", enclosed in Appendix E. The environmental assessment is assigned RCS number 2006-110. The project numbers assigned are listed in paragraph 2.4.2.

1.1 INTRODUCTION

Located in northeastern North Dakota (ND), Grand Forks AFB is the first core refueling wing in Air Mobility Command (AMC) and home to 51 KC-135R Stratotanker aircraft. The host organization at Grand Forks AFB is the 319th Air Refueling Wing (ARW). Its mission is to guarantee global reach, by extending range in the air, supplying people and cargo where and when they are needed and provides air refueling and airlift capability support to United States Air Force (USAF) operations anywhere in the world, at any time. Organizational structure of the 319th ARW consists primarily of an operations group, maintenance group, mission support group, and medical group.

The location of the proposed action (and the alternative actions) would be at Grand Forks AFB, ND. Grand Forks AFB covers approximately 5,420 acres of government-owned land and is located in northeastern ND, about 14 miles west of Grand Forks, along United States (US) Highway 2. Grand Forks (population 49,321) is the third largest city in ND. Appendix A includes a Location Map. The city, and surrounding area, is a regional center for agriculture, education, and government. It is located approximately 160 miles south of Winnipeg, Manitoba, and 315 miles northwest of Minneapolis, Minnesota. The total base population, as of May 2005, is approximately 7,175. Of that, 2,842 are military, 3,953 are military dependents, and 380 civilians working on base (Grand Forks AFB, 2005).

1.2 NEED FOR THE ACTION

The purpose of the proposed action is to implement the "Green Plan", a planning document which provides a cohesive approach to manage and improve the maintenance, natural resources, and overall aesthetics at Grand Forks Air Force Base. Below are objectives that are followed throughout the entire project lifespan.

- •Utilize the installation plant list to create continuity in all new work and facility grounds upgrades.
- •Incorporate freeform, naturally flowing lines in all major elements of the landscape, such as turf layout, planting used for screens and barriers, and tree planting configurations.
- •Incorporate a combination of berms and landscape treatment to all new facilities and parking areas.

•Enhance existing tree rows and windbreaks with freeform design, additional color, and texture combinations.
•Sod shall be used in all new or restored areas of ground cover unless otherwise approved by the Base Civil Engineer.
•Eliminate unplanned planting throughout the installation.
•Develop and maintain highly visible locations such as entries and gates.
•Use xeriscaping (low maintenance, needing low water) practices whenever possible to minimize future maintenance.
•Ensure that plantings are easily maintainable and are coordinated with base maintenance operations.
•Ensure site grading not only provides drainage for the newly developed area, but does not hinder drainage of adjacent areas.
•Include ecosystem management and biodiversity concerns in the design and planning of project maximizing use of native species.
•Enhance outdoor recreation and environmental education with "Green Plan" projects.
•Integrate all management activities in a way that sustains, promotes, and restores the health and integrity of the environment at Grand Forks Air Force Base, North Dakota.

1.3 OBJECTIVES FOR THE ACTION

The proposed project will create a unified city-like environment that enhances the quality of life. Erosion control will prevent the loss of topsoil, and improve the general appearance of the improved areas of the base. A need exists for a healthy, pest and disease free, thriving, attractive, and professional appearance of exterior landscapes. The "Green Plan" integrates all management activities in a way that sustains, promotes, and restores the health and integrity of the environment.

1.4 SCOPE OF EA

This EA identifies, describes, and evaluates the potential environmental impacts associated with landscaping multiple projects on Grand Forks AFB. This analysis covers only those items listed above. It does not include any previous construction or construction of facilities, parking lots, associated water drainage structures, or other non-related construction and construction activities.

The following must be considered under the NEPA, Section 102(E).

- Air Quality
- Noise
- Wastes, Hazardous Materials, and Stored Fuels
- Water Resources
- Biological Resources
- Socioeconomic Resources
- Cultural Resources
- Land Use

- Transportation Systems
- Airspace/Airfield Operations
- Safety and Occupation Health
- Environmental Management
- Environmental Justice

1.5 DECISION(S) THAT MUST BE MADE

This EA evaluates the environmental consequences from landscaping multiple projects on Grand Forks AFB. NEPA requires that environmental impacts be considered prior to final decision on a proposed project. The Environmental Management Flight Chief will determine if a Finding of No Significant Impact can be signed or if an Environmental Impact Statement (EIS) must be prepared. Preparation of an environmental analysis must be accomplished prior to a final decision regarding the proposed project and must be available to inform decision makers of potential environmental impacts of selecting the proposed action or any of the alternatives.

1.6 APPLICABLE REGULATORY REQUIREMENTS AND REQUIRED COORDINATION

These regulations require federal agencies to analyze potential environmental impacts of proposed actions and alternatives and to use these analyses in making decisions on a proposed action. All cumulative effects and irretrievable commitment of resources must also be assessed during this process. The Council on Environmental Quality (CEQ) regulations declares that an EA is required to accomplish the following objectives:

- Briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a Finding of No Significant Impact (FONSI).
- Aid in an agency's compliance with NEPA when an EIS is not necessary, and facilitate preparation of an EIS when necessary.

Air Force Instruction (AFI) 32-7061 as promulgated in 32 Code of Federal Regulations (CFR) 989, specifies the procedural requirements for the implementation of NEPA and the preparation of an EA. Other environmental regulatory requirements relevant to the proposed action and alternatives are also in this EA. Regulatory requirements including, but not restricted to the following programs will be assessed:

- AF Environmental Impact Analysis Process (EIAP) (32 CFR 989)
- AFI 32-7020, Environmental Restoration Program
- AFI 32-7040, Air Quality Compliance
- AFI 32-7041, Water Quality Compliance
- AFI 32-7042, Solid and Hazardous Waste Compliance
- AFI 32-7063, Air Installation Compatible Use Zone (AICUZ) Program
- AFI 32-7064, Integrated Natural Resource Management
- Archaeological Resources Protection Act (ARPA) [16 U.S.C. Sec 470a-11, et seq., as amended]
- Clean Air Act (CAA) [42 U.S.C. Sec 7401, et seq., as amended]

- Clean Water Act (CWA) [33 U.S.C. Sec 400, et seq.]
- CWA [33 U.S.C. Sec 1251, et seq., as amended]
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) [42 U.S.C. Sec. 9601, et seq.]
- Defense Environmental Restoration Program [10 U.S.C. Sec. 2701, et seq.]
- Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 [42 U.S.C. Sec. 11001, et seq.]
- Endangered Species Act (ESA) [16 U.S.C. Sec 1531-1543, et seq.]
- Executive Order (EO) 11514, Protection and Enhancement of Environmental Quality as Amended by EO 11991
- EO 11988, Floodplain Management
- EO 11990, Protection of Wetlands
- EO 12372, Intergovernmental Review of Federal Programs
- EO 12898, Environmental Justice
- EO 12989 Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks
- Hazardous Materials Transportation Act of 1975 [49 U.S.C. Sec 1761, et seq.]
- NEPA of 1969 [42 U.S.C. Sec 4321, et seq.]
- National Historic Preservation Act (NHPA) of 1966 [16 U.S.C. Sec 470, et seq., as amended]
- The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 [Public Law 101-601, 25 U.S.C. Sec. 3001-3013, et seq.]
- Noise Control Act of 1972 [42 U.S.C. Sec. 4901, et seq., Public Law 92-574]
- ND Air Pollution Control Act (Title 23) and Regulations
- ND Air Quality Standards (Title 33)
- ND Hazardous Air Pollutants Emission Standards (Title 33)
- Occupational Safety and Health Act (OSHA) of 1970 [29 U.S.C. Sec. 651, et seq.]
- Resource Conservation and Recovery Act (RCRA) of 1976 [42 U.S.C. Sec. 6901, et seq.]
- Toxic Substances Control Act (TSCA) of 1976 [15 U.S.C. Sec. 2601, et seq.]

Grand Forks AFB has a National Pollutant Discharge Elimination System (NPDES) permit for both waste water and storm water to cover base-wide industrial activities. Implementation of the proposed actions or alternative actions in the Green Plan would disturb more than one acre. The contractor performing the installation would need to obtain a separate NPDES construction permit from the North Dakota Department of Health (NDDH). The permit would allow discharge of storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover.

Scoping for this EA included discussion of relevant issues with members of the environmental management and bioenvironmental flights. Scoping letters requesting comments on possible issues of concern are sent to agencies with pertinent resource responsibilities, as listed in Section 6.0. In accordance with 32 CFR 989, a copy of the final EA is submitted to the ND Division of Community Services.

Applicable regulatory requirements and required coordination include a Work Clearance Request, Stormwater Protection Plan, Dust Control Plan, Spill Control Plan, and Erosion and Sediment Control Plan with the CEV Water Program Manager and Contracting Officer.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

Based on the descriptions of the relevant environmental resources presented in Section 3 and the predictions and analyses presented in Section 4, this section presents a comparative summary matrix of the alternatives (the heart of the analysis), providing the decision maker and the public with a clear basis for choice among the alternatives.

This section has five parts:

- Selection Criteria for Alternatives
- Alternatives Considered but Eliminated from Detailed Study
- Detailed Descriptions of the Three Alternatives Considered
- Comparison of Environmental Effects of the Proposed Action and Alternatives
- Identification of the Preferred Alternative

2.2 SELECTION CRITERIA FOR ALTERNATIVES

Selection criteria used to evaluate the Proposed and Alternative Actions include the following:

- A cost effective method to enhance the environment at Grand Forks AFB.
- Minimum mission requirements include efficiency, effectiveness, legality, force protection and safety to meet AF requirements.
- Minimum environmental standards include OSHA, AFOSH, NFPA, AFI, CFR, EPA and North Dakota standards for noise, air, water, safety, HM/HW, vegetation, cultural, geology, soils, and socioeconomic.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

There were no alternatives considered but eliminated from detailed study.

2.4 DESCRIPTION OF PROPOSED ALTERNATIVES

This section describes the activities that would occur under three alternatives: the no action alternative, the proposed action, and action alternative. These three alternatives provide the decision maker with a reasonable range of alternatives from which to choose.

2.4.1 Alternative 1 (No Action Alternative): Status Quo

The no action alternative would be to leave the base as it is. Soil erosion will continue. Physical features of the base complex will continue to deteriorate and not provide amenities common to similar environments in the civilian community. Morale, productivity, and career satisfaction of the professional force, and respect of retirees and dignitaries visiting Grand Forks AFB will be adversely affected.

2.4.2 Alternative 2 (Proposed Action): Plant trees, shrubs, annuals, perennials, and accent plants. Install barrier fabric, edging, inorganic and organic mulch, and all other associated items for a complete landscaping. Install irrigation systems. Incorporate landscape design services. Fertilize and add soil amendments. Perform landscape establishment. Perform erosion control by sodding the improved area of the base. Exterior site improvements would include tilling, topsoil, soil additives, fine grading, and installation of sod. Install sod and other turf. Perform site preparation. Landscape grading. Furnish all plants, labor, equipment and related materials by contract. See the "Green Plan" in Appendix E for a description of individual landscape projects.

The projects included in this EA include:

Priority	Project_Number _	PROJECT_TITLE_
1	JFSD200509	LANDSCAPE STEEN BLVD
2	JFSD200336	LANDSCAPE/SCREEN COMMUNITY AREA
3	JFSD200510	LANDSCAPE HOLZAPPLE & TUSKEGEE
4	JFSD200525	LANDSCAPE HOLZAPPLE ST EAST SIDE
5	JFSD200536	LANDSCAPE HONOR GUARD
6	JFSD980023	EROSION CONTROL BASE WIDE
7	JFSD200410	LANDSCAPE POST OFFICE
8	JFSD200512	LANDSCAPE FAMILY SUPPORT
9	JFSD200526	LANDSCAPE CHILD DEVELOPMENT CENTER
10	JFSD200511	LANDSCAPE LIBRARY
11	JFSD200538	LANDSCAPE BOWLING CENTER
12	JFSD200539	LANDSCAPE COMMUNITY ACTIVITIES CENTER
13	JFSD200528	LANDSCAPE TUSKEGEE AIRMEN BLVD
15	JFSD200533	LANDSCAPE G ST
16	JFSD200530	LANDSCAPE DORM AREA EAST SIDE
17	JFSD200529	LANDSCAPE 7TH AVE
18	JFSD200447	LANDSCAPE PAVILION
19	JFSD980023P2	EROSION CONTROL BASE WIDE
23	JFSD200531	LANDSCAPE EIELSON ST
24	JFSD200537	LANDSCAPE VET CLINIC
25	JFSD980023P3	EROSION CONTROL BASE WIDE
26	JFSD200532	MULTI-USE TRAIL LANDSCAPE IMPROVEMENTS
27	JFSD200488	LANDSCAPE/SCREEN RV LOT
33	JFSD539333	LANDSCAPE MULTI-USE RECREATION AREA
34	JFSD200534	LANDSCAPE MSS/FINANCE/COMM
35	JFSD200513	LANDSCAPE NETWORK CONTROL CENTER
39	JFSD980023P4	EROSION CONTROL BASE WIDE

Plant selection is critical at Grand Forks AFB because of extreme climate conditions found in the Northern Great Plains. The only places with similar climate to Grand Forks AFB are Southern Siberia, Mid-Russia, and Northern China. Landscape planning using local indigenous species is necessary because of these extremities. Plants low in maintenance are also a desired quality for installation landscapes to reduce costs. Finding plants that are indigenous, low in maintenance, and of significant landscape value can therefore be a challenge in this region. The plant pallette

for Grand Forks AFB has been tested in the past for excellence on the installation and throughout the Red River Valley with recommendations from local university researchers and county extension agents. The "Green Plan" includes a list of the best plant choices for Grand Forks AFB.

When designing a landscape plan, it is important to include a heterogeneous mixture of several species to minimize the effects of disease. Within every design, there must be landscape value for every season. Each design should have early and late summer blooms, dazzling fall color, and winter significance such as unique stem color or a roughly textured bark for a beautiful winter silhouette.

Natural resource projects have been included in the "Green Plan" that are discussed in the Integrated Natural Resources Management Plan (INRMP) and the associated EA. For example, planting vegetation structures such as shelterbelts is an essential tool on the Northern Great Plains to include planning for wildlife habitat and protection, improving energy conservation for buildings and transportation systems, reducing air pollution and run-off, and trapping sediment. Implementing the "Green Plan" projects will meet many of the INRMP goals. Incorporating the concept of ecosystem management and emphasizing species diversity is perhaps the most important. This will provide for managing the most species, instead of specializing on only the needs of a few. For example, planting native tree species in the proposed projects and managing them appropriately will provide essential cavity nesting space, essential fruit and nut food resources, storm cover protection for wildlife, and stabilization of soils. Enhancement of wildlife habitats is fundamental to landscape-scale ecology. Management of these resources should include recognizing the potential benefits of mostly-dead trees located in shelterbelts, grove plantings, and riparian woodlands. Many Northern Plains species use these habitats like: woodpeckers, owls, flickers, bluebirds, merlins, kestrels, swallows, wrens, squirrels, raccoons, chipmunks, and white-footed mice. Maintenance of these areas is minimal, can eliminate overspending and reduce costs, and protect the base from devastation by pestilence and disease. Enhancing outdoor recreation and providing natural resource education is another important goal of the Grand Forks AFB INRMP. The development of interpretive signs, construction of a butterfly garden, vegetation control in off-road vehicle areas, and improvement of multi-use trail areas all contribute to this goal. Interpretive signs will help promote and educate residents about native species management and biodiversity developments in the "Prairie View Nature Preserve." The nature preserve was designed for the community to experience the native grassland vegetation of the prairie that once covered this area before settlement. It is intended to serve as an educational tool to get people connected to the land and their environment. The preserve is an excellent asset to "Earth Day", "Arbor Day", and everyday events with the local schools, and child development center.

Berms can be used in large, flat open areas to help define a space, or to direct or intercept water run-off. Berm slopes need to be soft and gentle and carefully integrated into the overall grading plan of a project. Excess soil from building foundation excavation operations may be used to create berms. Landscape treatment and berming of parking areas should always consider mowing and snow removal requirements to avoid the potential of increased long-term maintenance. The slope of the berm should not exceed 25% to 30%. Install curbed medians at the ends of parking rows, or full length. Formally planted and curbed medians reduce the

massive appearance of parking areas and also provide shade to vehicles. Landscape materials can be used to screen parking areas from view along major circulation routes or near high visibility facilities. Berms and informal evergreen shrub plantings are effective solutions year round. Berms should be used whenever possible to screen the view of parking lots from streets and as a physical barrier between parking lot and buildings to make set-back distances effective.

The proper selection and placement of plant material can lower heating and cooling costs by as much as 20%. Professional landscaping can reduce utility bills and conserve energy. In climates with cold winters, the goal is to block the winter wind with trees and shrubs while capturing the winter sun. In warmer seasons, the goal is to block the summer sun while channeling the summer breezes. During summer, one large tree can absorb as much heat as several window air conditioners and can lower temperatures by ten degrees. Trees provide shelter from wind, rain, and the hot summer sun. Along with these benefits, planting a nice tree will look marvelous as well. The use of landscape plants will lower noise levels, reduce crime and enhance unpleasant views. Urban tree shade increases pavement durability and reduces maintenance costs.

The advantages of a professionally installed and maintained landscape go beyond "curb appeal". The most well-known benefit of landscaping: is the increase of the aesthetic quality of the property. A nice assortment of trees and shrubs help the facility to blend into the surrounding environment, and thus it becomes more visually pleasing. With the addition of annuals and perennials, color and visual contrast is added to the landscape. Quality landscape that is well-maintained can increase the value, usability, and aesthetics of the facility and reflect positively on the U.S. Air Force.

2.4.3 Alternative 3: Plant trees, shrubs, annuals, perennials, and accent plants in-house by CES.

2.5 DESCRIPTION OF PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS RELEVANT TO CUMULATIVE IMPACTS

Impacts from the Proposed Action would be concurrent with other actions occurring at Grand Forks AFB. There are several other construction and demolition projects occurring on Grand Forks AFB in the same time frame. These projects are addressed under separate NEPA documents. A related EIAP document is the Environmental Assessment and FONSI accomplished in #2004-339 for the Integrated Natural Resources Management Plan (INRMP). It includes wetland delineation, tree arboretum and Prairie View Nature Preserve maintenance and native praire restoration, butterfly garden, urban tree inventory, riparian river bank stabilization, shelterbelt rejuvenation, living snow fences, habitat assessment, noxious weed eradication, bird houses and surveys, beaver control; threatened, endangered and sensitive species monitors; hay lease maintenance, burn plan, mosquito control, multipurpose base trail loop, BASH reduction, deer bowhunting, Turtle River fishing and picnicking, golf course cover, public awareness signs and displays, and GIS incorporation. Multiple landscape projects of the past have been CATEXed, based on EA/FONSI # 1999-052 Landscape Dorm Community.

Projects within the “Green Plan” which are included in the INRMP are:

Priority	Project Number	PROJECT TITLE
14	JFSD532111	LIVING SNOW FENCES BASE AREAS

20	JFSD539267	SHELTERBELT REJUVENATION BASE AREAS
21	JFSD532111P2	LIVING SNOW FENCES BASE AREAS
22	JFSD200535	TREE MAINTENANCE/REMOVAL BASE AREAS
26	JFSD200532	MULTI-USE TRAIL LANDSCAPE IMPROVEMENTS
28	JFSD539267P2	SHELTERBELT REJUVENATION BASE AREAS
29	JFSD581305	INTERPRETIVE SIGNS PRAIRIE VIEW NATURE PRESERVE
30	JFSD539222	PRAIRIE VIEW BUTTERFLY GARDEN
31	JFSD532111P3	LIVING SNOW FENCES BASE AREAS
32	JFSD536677	URBAN TREE INVENTORY GRAND FORKS AFB
36	JFSD536050	RIPARIAN RIVER BANK STABILIZATION AND AFORESTATION
37	JFSD536677A6	URBAN TREE INVENTORY GRAND FORKS AFB
38	JFSD532111P4	LIVING SNOW FENCES BASE AREAS
39	JFSD980023P4	EROSION CONTROL BASE WIDE
40	JFSD539267P3	SHELTERBELT REJUVENATION BASE AREAS
41	JFSD536051	RIPARIAN RIVER BANK STABILIZATION & AFORESTATION II
42	JFSD539267P4	SHELTERBELT REJUVENATION BASE AREAS

2.6 SUMMARY COMPARISON OF THE EFFECTS OF ALL ALTERNATIVES

Potential impacts from implementing the No Action Alternative, the Proposed Action, and Alternative are discussed in detail in Chapter 4.

2.7 IDENTIFICATION OF PREFERRED ALTERNATIVE

The preferred alternative is the proposed action to landscape multiple projects based on the “Green Plan”.

Table 2.6.1: Summary of Environmental Impacts			
	No Action Alternative 1	Proposed Action 2	Alternative 3
Legend: ST = short-term; LT = long-term			
Air Quality	None	Minor Adverse ST Impact Beneficial LT Impact	Minor Adverse ST Impact Beneficial LT Impact
Noise	None	Minor Adverse ST Impact	Minor Adverse ST Impact
Wastes, Hazardous Materials, and Stored Fuels	None	Minor Adverse ST Impact	Minor Adverse ST Impact
Water Resources			
Ground Water	None	Minor Adverse ST Impact	Minor Adverse ST Impact
Surface Water	None	Minor Adverse ST Impact Beneficial LT Impact	Minor Adverse ST Impact Beneficial LT Impact
Wastewater	None	None	None
Water Quality	None	None	None
Wetlands	None	Potential Adverse ST Impact	Potential Adverse ST Impact
Biological Resources			
Vegetation	None	Minor Adverse ST Impact Positive LT Impact	Minor Adverse ST Impact Positive LT Impact
Noxious Weeds	None	Minor Adverse ST Impact	Minor Adverse ST Impact
Wildlife	None	Minor Adverse ST Impact	Minor Adverse ST Impact
Threatened and Endangered Species	None	Minor Adverse ST Impact	Minor Adverse ST Impact
Socioeconomic Resources	None	Minor Beneficial ST Impact	Minor Beneficial ST Impact
Cultural Resources	None	None	None
Land Use	None	None	None
Transportation Systems	None	Minor Adverse ST Impact	Minor Adverse ST Impact
Airspace/Airfield Operations			
Aircraft Safety	None	None	None
Airspace Compatibility	None	None	None
Safety and Occupational Health	None	Minor Adverse ST Impact	Minor Adverse ST Impact
Environmental Management			
Installation Restoration Program	None	None	None
Geological Resources	None	None	None
Pesticide Management	None	Minor Adverse ST Impact	Minor Adverse ST Impact
Environmental Justice	None	None	None

3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This section succinctly describes the operational concerns and the environmental resources relevant to the decision that must be made concerning this proposed action. Environmental concerns and issues relevant to the decision to be made and the attributes of the potentially affected environment are studied in greater detail in this section. This descriptive section, combined with the definitions of the alternatives in Section 2, and their predicted effects in Section 4, establish the scientific baseline against which the decision-maker and the public can compare and evaluate the activities and effects of all the alternatives.

3.2 AIR QUALITY

Grand Forks AFB has a humid continental climate that is characterized by frequent and drastic weather changes. The summers are short and humid with frequent thunderstorms. Winters are long and severe with almost continuous snow cover. The spring and fall seasons are generally short transition periods. The average annual temperature is 40°Farenheit (F) and the monthly mean temperature varies from 6°F in January to 70°F in July. Mean annual precipitation is 19.5 inches. Rainfall is generally well distributed throughout the year, with summer being the wettest season and winter the driest. An average of 34 thunderstorm days per year is recorded, with some of these storms being severe and accompanied by hail and tornadoes. Mean annual snowfall recorded is 40 inches with the mean monthly snowfall ranging from 1.6 inches in October to 8.0 inches in March. Relative humidity averages 58 percent annually, with highest humidity being recorded in the early morning. The average humidity at dawn is 76 percent. Mean cloud cover is 48 percent in the summer and 56 percent in the winter (USAF, 2003).

Table 3.2-1: Climate Data for Grand Forks AFB, ND

	Mean Temperature (ºF) Daily			Precipitation (Inches) Monthly		
Month	Maximum	Minimum	Monthly	Mean	Maximum	Minimum
January	15	-1	6	0.7	2.4	0.1
February	21	5	13	0.5	3.2	0.0
March	34	18	26	1.0	2.9	0.0
April	53	32	41	1.5	4.0	0.0
May	69	47	56	2.5	7.8	0.5
June	77	56	66	3.0	8.1	0.8
July	81	61	70	2.7	8.1	0.5
August	80	59	67	2.6	5.5	0.1
September	70	49	57	2.3	6.2	0.3
October	56	37	44	1.4	5.7	0.1
November	34	20	26	0.7	3.3	0.0
December	20	6	12	0.6	1.4	0.0

Source: AFCCC/DOO, October 1998

Wind speed averages 10 miles per hour (mph). A maximum wind speed of 74 mph has been recorded. Wind direction is generally from the northwest during the late fall, winter, and spring, and from the southeast during the summer.

Grand Forks County is included in the ND Air Quality Control Region. This region is in attainment status for all criteria pollutants. In 1997, the ND Department of Health (NDDH) conducted an Air Quality Monitoring Survey that indicated that the quality of ambient air in ND is generally good as it is located in an attainment area (NDDH, 1998). Grand Forks AFB has the following air permits: T5-F78004 (permit to operate) issued by NDDH and a CAA Title V air emissions permit.

The United States Environmental Protection Agency (USEPA) established the National Ambient Air Quality Standards (NAAQS), which define the maximum allowable concentrations of pollutants that may be reached, but not exceeded within a given time period. The NAAQS regulates the following criteria pollutants: Ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and particulate matter. The ND Ambient Air Quality Standards (NDAAQS) were set by the State of ND. These standards are more stringent and emissions for operations in ND must comply with the Federal or State standard that is the most restrictive. There is also a standard for hydrogen sulfide (H_2S) in ND.

Prevention of significant deterioration (PSD) regulations establishes SO_2, particulate matter 10 microns in diameter (PM_{10}), and NO_2 that can be emitted above a premeasured amount in each of three class areas. Grand Forks AFB is located in a PSD Class II area where moderate, well-controlled industrial growth could be permitted. Class I areas are pristine areas and include national parks and wilderness areas. Significant increases in emissions from stationary sources (100 tons per year (tpy) of CO, 40 tpy of nitrogen oxides (NO_X), volatile organic compounds (VOCs), or sulfur oxides (SO_X), or 15 tpy of PM_{10}) and the addition of major sources requires compliance with PSD regulations. There is also a 25 ton/year level for total particulate.

Air pollutants include O_3, CO, NO_2, SO_2, Pb, and particulate matter. Ground disturbing activities create PM_{10} and particulate matter 2.5 microns in diameter ($PM_{2.5}$). Combustion creates CO, SO_2, $PM_{10,}$ and $PM_{2.5}$ particulate matter and the precursors (VOC and NO_2) to O_3. Only small amounts of Hazardous Air Pollutants (HAP) are generated from internal combustion processes or earth-moving activities. The Grand Forks AFB Final Emissions Survey Report (USAF, 1996) reported that Grand Forks AFB only generated small levels HAPs, 10.3 tpy of combined HAPs and 2.2 tpy maximum of a single HAP (methyl ethyl ketone). Methyl Ethyl Ketone is associated with aircraft and vehicle maintenance and repair. Secondary sources include fuel storage and dispensing (USAF, 2001a).

Table 3.2-2
National Ambient Air Quality Standards (NAAQS) and ND Ambient Air Quality Standards (NDAAQS)

Pollutant	Averaging Time	NAAQS $\mu g/m^3$ (ppm)[a]		NDAAQS $\mu g/m^3$ (ppm)[a]
		Primary[b]	Secondary[c]	
O_3	1 hr	235 (0.12)	Same	Same
	8 hr[e]	157 (0.08)	Same	None
CO	1 hr	40,000 (35)	None	40,000 (35)
	8 hr	10,000 (9)	None	10,000 (9)
NO_2	AAM[d]	100 (0.053)	Same	Same
SO_2	1 hr	None	None	715 (0.273)
	3 hr	None	1,300 (0.5)	None
	24 hr	365 (0.14)	None	260 (0.099)
	AAM	80 (0.03)	None	60 (0.023)
PM_{10}	AAM	50	Same	Same
	24 hr	150	Same	Same
$PM_{2.5}$[e]	AAM	65	Same	None
	24 hr	15	Same	None
Pb	¼ year	1.5	Same	Same
H_2S	1 hr	None	None	280 (0.20)
	24 hr	None	None	140 (0.10)
	3 mth	None	None	28 (0.02)
	AAM	None	None	14 (10)
	Instantaneous			14 (10)

[a] $\mu g/m^3$ – micrograms per cubic meter; ppm – parts per million
[b] National Primary Standards establish the level of air quality necessary to protect the public health from any known or anticipated adverse effects of pollutant, allowing a margin of safety to protect sensitive members of the population.
[c] National Secondary Standards establish the level of air quality necessary to protect the public welfare by preventing injury to agricultural crops and livestock, deterioration of materials and property, and adverse impacts on the environment.
[d] AAM – Annual Arithmetic Mean.
[e] The Ozone 8-hour standard and the PM 2.5 standards are included for information only. A 1999 federal court ruling blocked implementation of these standards, which USEPA proposed in 1997. USEPA has asked the US Supreme Court to reconsider that decision (USEPA, 2000).
PM_{10} is particulate matter equal to or less than 10 microns in diameter.
$PM_{2.5}$ is particulate matter equal to or less than 2.5 microns in diameter.
Source: 40 CFR 50, ND Air Pollution Control Regulations – North Dakota Administrative Code (NDAC) 33-15

3.3 NOISE

Noise generated on Grand Forks AFB consists mostly of aircraft, vehicular traffic and construction activity. Most noise is generated from aircraft during takeoff and landing and not from ground traffic. Noise levels are dependent upon type of aircraft, type of operations, and distance from the observer to the aircraft. Duration of the noise is dependent upon proximity of the aircraft, speed, and orientation with respect to the observer.

Table 3.3-1
Typical Decibel Levels Encountered in the Environment and Industry

Sound Level (dBa)[a]	Maximum Exposure Limits	Source of Noise	Subjective Impression
10			Threshold of hearing
20		Still recording studio; Rustling leaves	
30		Quiet bedroom	
35		Soft whisper at 5 ft[b]; Typical library	
40		Quiet urban setting (nighttime); Normal level in home	Threshold of quiet
45		Large transformer at 200 ft	
50		Private business office; Light traffic at 100 ft; Quiet urban setting (daytime)	
55		Window air conditioner; Men's clothing department in store	Desirable limit for outdoor residential area use (EPA)
60		Conversation speech; Data processing center	
65		Busy restaurant; Automobile at 100 ft	Acceptable level for residential land use
70		Vacuum cleaner in home; Freight train at 100 ft	Threshold of moderately loud
75		Freeway at 10 ft	
80		Ringing alarm clock at 2 ft; Kitchen garbage disposal; Loud orchestral music in large room	Most residents annoyed
85		Printing press; Boiler room; Heavy truck at 50 ft	Threshold of hearing damage for prolonged exposure
90	8 hr[c]	Heavy city traffic	
95	4 hr	Freight train at 50 ft; Home lawn mower	
100	2 hr	Pile driver at 50 ft; Heavy diesel equipment at 25 ft	Threshold of very loud
105	1 hr	Banging on steel plate; Air Hammer	
110	0.5 hr	Rock music concert; Turbine condenser	
115	0.25 hr	Jet plane overhead at 500 ft	
120	< 0.25 hr	Jet plane taking off at 200 ft	Threshold of pain
135	< 0.25 hr	Civil defense siren at 100 ft	Threshold of extremely loud

[a]dBA – decibals
[b]ft – feet
[c]hr - hours
Source: US Army, 1978

Table 3.3-2
Approximate Sound Levels (dBa) of Construction Equipment

Equipment Type	Sound Levels (dBa) at Various Distances (ft)					
	50	100	200	400	800	1,600
Front-end Loader	84	78	72	66	60	54
Dump Truck	83	77	71	65	59	53
Truck	83	77	71	65	59	53
Tractor	84	78	72	66	58	52

Source: Thurman, 1976; US Army, 1978

Because military installations attract development in proximity to their airfields, the potential exists for urban encroachment and incompatible development. The USAF utilizes a program known as AICUZ to help alleviate noise and accident potential problems due to unsuitable community development. AICUZ recommendations give surrounding communities alternatives to help prevent urban encroachment. Noise contours are developed from the Day-Night Average A-Weighted Sound Level (DNL) data which defines the noise created by flight operations and ground-based activities. The AICUZ also defines Accident Potential Zones (APZs), which are rectangular corridors extending from the ends of the runways. Recommended land use activities and densities in the APZs for residential, commercial, and industrial uses are provided in the base's AICUZ study. Grand Forks AFB takes measures to minimize noise levels by evaluating aircraft operations. Blast deflectors are utilized in designated areas to deflect blast and minimize exposure to noise.

3.4 WASTES, HAZARDOUS MATERIALS, AND STORED FUELS

3.4.1 Hazardous Waste, Hazardous Material, Recyclable Material

Hazardous wastes, as listed under the RCRA, are defined as any solid, liquid, contained gaseous, or combination of wastes that pose a substantive or potential hazard to human health or the environment. On-base hazardous waste generation involves three types of on-base sites: an accumulation point (90-day), satellite accumulation points, and spill cleanup equipment and materials storage (USAF, 2001c). Discharge and emergency response equipment is maintained in accessible areas throughout Grand Forks AFB. The Fire Department maintains adequate fire response and discharge control and containment equipment. Equipment stores are maintained in buildings 409 and 530. Petroleum contaminated soils generated from excavations throughout the base can be treated at the land treatment facility located on base. These solid wastes are tilled or turned several times a year to remediate the soils to acceptable levels.

Recyclable materials from industrial facilities are collected in the recycling facility, in building 671. Paper, cardboard, and wood are collected in separate storage bins. Glass, plastics and metal cans are commingled. Curbside containers are used in housing for recyclable materials. A contractor collects these materials and transports them off base for processing.

The Environmental Management Flight manages the hazardous material through a contract with Science Applications International Corporation (SAIC). Typical hazardous materials include reactive materials such as explosives, ignitables, toxics, and corrosives. Improper storage can impact human health and the safety of the environment.

3.4.2 Underground and Above Ground Storage Tanks

Since Grand Forks AFB is a military installation with a flying mission, there are several aboveground and underground fuel storage tanks (ASTs and USTs).

Gasoline, diesel fuel, heating fuel, JP-8 aircraft fuel, and oil-water separator (OWS)-recovered oils are stored in thirty-nine (39) USTs. Twenty (20) regulated USTs include three (3) gasoline tanks, eight (8) diesel tanks, three (3) JP-8 tanks, and six (6) OWS product recovery tanks.

Deferred USTs include five (5) JP-8 tanks. Five (5) USTs exempt from regulation include one (1) heating oil tank, three (3) emergency spill containment tanks, and one (1) hydraulic oil recovery tank.

Gasoline, diesel fuel, heating oil, JP-8, and used oil are stored in fifty-eight (58) ASTs. The majority of petroleum is JP-8 stored in six (6) tanks with a capacity of 3,990,000 gallons for the hydrant fuel system. Diesel fuel is stored in forty-five (45) tanks primarily for emergency generators. Other tanks include: heating oil stored in three (2) tanks; gasoline stored in two (2) tanks; and, used oil stored in three (3) tanks. All ASTs either have secondary containment or are programmed to have secondary containment installed. The six (6) hydrant fuel system tanks each are contained by a concrete dike system.

Runway deicing fluid (potassium acetate) is stored in two (2) 5000 gallon tanks while aircraft deicing fluid (propylene glycol) is stored in a 20,000 gallon tank (Type I) and a 4,000 gallon tank (Type IV).

3.4.3 Solid Waste Management

Hard fill, construction debris, and inert waste generated by Grand Forks AFB are disposed of at a permitted off-base landfill. All on-base household garbage and solid waste is collected by a contractor and transported to the Grand Forks Municipal Landfill, which opened in 1982.

The majority of construction debris is disposed of at Berger Landfill (permit number IT-198) while municipal and asbestos waste is disposed of at the Grand Forks Municipal Landfill (SW-069).

GFAFB also operates a land treatment facility (IT-183) for the remediation of petroleum-contaminated soils (PCSs). PCSs are generated on-base through spills, are encountered while excavating for various subsurface repairs, or encountered while replacing or removing underground storage tanks and piping.

3.5 WATER RESOURCES

3.5.1 Ground Water

Chemical quality of ground water is dependent upon the amount and type of dissolved gases, minerals, and organic material leached by water from surrounding rocks as it flows from recharge to discharge areas. The water table depth varies throughout the base, from a typical 1-3 ft to 10 ft or more below the surface.

Even though the Dakota Aquifer has produced more water than any other aquifer in Grand Forks County, the water is very saline and generally unsatisfactory for domestic and most industrial uses. Its primary use is for livestock watering. It is sodium chloride type water with total dissolved solids concentrations of about 4,400 ppm. The water generally contains excessive chloride, iron, sulfate, total dissolved solids, and fluoride. The water from the Dakota is highly toxic to most domestic plants and small grain crops, and in places, the water is too highly mineralized for use as livestock water (Hansen and Kume, 1970).

Water from wells tapping the Emerado Aquifer near Grand Forks AFB is generally of poor quality due to upward leakage of water from underlying bedrock aquifers. It is sodium sulfate type water with excessive hardness, chloride, sulfate, and total dissolved solids. Water from the Lake Agassiz beach aquifers is usually of good chemical quality in Grand Forks County. The water is a calcium bicarbonate type that is relatively soft. The total dissolved content ranges from 308 to 1,490 ppm. Most water from beach aquifers is satisfactory for industrial, livestock, and agricultural uses (Hansen and Kume, 1970).

Grand Forks AFB draws 85 to 90 percent of its water for industrial, commercial and housing functions from the City of Grand Forks and 10 to 15 percent from Agassiz Water.

3.5.2 Surface Water

Natural surface water features located on or near Grand Forks AFB are the Turtle River and Kellys Slough National Wildlife Refuge (NWR). Drainage from surface water channels ultimately flows into the Red River.

The Turtle River, crossing the base boundary at the northwest corner, is very sinuous and generally flows in a northeasterly direction. It receives surface water runoff from the western portion of Grand Forks AFB and eventually empties into the Red River of the North that flows north to Lake Winnipeg, Canada. The Red River drainage basin is part of the Hudson Bay drainage system. At Manvel, ND, approximately 10 miles northeast of Grand Forks AFB, the mean discharge of the Turtle River is 50.3 feet cubed per second (ft^3/s). Peak flows result from spring runoff in April and minimum flows (or no flow in some years) occur in January and February.

NDDH has designated the Turtle River to be a Class II stream, it may be intermittent, but, when flowing, the quality of the water, after treatment, meets the chemical, physical, and bacteriological requirements of the NDDH for municipal use. The designation also states that it is of sufficient quality to permit use for irrigation, for propagation of life for resident fish species, and for boating, swimming, and other water recreation.

Kelly's Slough NWR occupies a wide, marshy flood plain with a poorly defined stream channel, approximately two miles east and downstream of Grand Forks AFB. Kellys Slough NWR receives surface water runoff from the east half of the base and effluent from the base sewage lagoons located east of the base. Surface water flow of the slough is northeasterly into the Turtle River Drainage from surface water channels ultimately flowing into the Red River. Floodplains are limited to an area 250 ft on either side of Turtle River (about 46 acres on base). Appendix C contains a map depicting floodplains. Any development in or modifications to floodplains must be coordinated with the Corps of Engineers and the Federal Emergency Management Agency (FEMA). The North Dakota State Water Commission requires that any structure in the floodplain have its lowest floor above the identified 100-year flood level.

Surface water runoff leaves Grand Forks AFB at four primary locations related to identifiable drainage areas on base. The four sites are identified as northeast, northwest, west, and southeast related to the base proper. These outfalls were approved by the NDDH as stated in the Grand

Forks AFB ND Pollutant Discharge Elimination System (NDPDES) Permit NDR02-0314 Stormwater Discharges from Industrial Activity. Of the four outfall locations, the west and northwest sites flow into the Turtle River, the northeast site flows to the north ditch and the southeast outfall flows into the south ditch. The latter two flow to Kellys Slough and then the Turtle River. All drainage from these surface water channels ultimately flows into the Red River. The Bioenvironmental Engineering Office samples the four outfall locations during months when de-icing activities occur on base.

3.5.3 Waste Water

Grand Forks AFB discharges its domestic and industrial wastewater to four stabilization lagoons located east of the main base. The four separate treatment cells consist of one primary treatment cell, two secondary treatment cells, and one tertiary treatment cell. Wastewater effluent is discharged under ND Permit ND0020621 into Kellys Slough. Wastewater discharges occur several times, lasting up to one week each, sometime between mid-April though November. Industrial wastewater at the base comprises less than ten percent of the total flow to the lagoons.

3.5.4 Water Quality

According to the National Water Quality Inventory Report (USEPA, 1995), ND reports the majority of rivers and streams have good water quality. Natural conditions, such as low flows, can contribute to violations of water quality standards. During low flow periods, the rivers are generally too saline for domestic use. Grand Forks AFB receives water from Grand Forks and Lake Agassiz Water. The city recovers its water from the Red River and the Red Lake River, while the water association provides water from aquifers. The water association recovers water from well systems within glacial drift aquifers (USAF, 1999). The 319th Civil Engineer Squadron tests the water received on base daily for fluorine and chlorine. The 319th Bioenvironmental Flight collects monthly bacteriological samples to be analyzed at the ND State Laboratory.

3.5.5 Wetlands

About 246,900 acres in the county are drained wetland Type I (wet meadow) to Type V (open freshwater). Approximately 59,500 acres of wetland Type I to V are used for wetland habitat. Wetland Types IV and V include areas of inland saline marshes and open saline water. Kellys Slough NWR occupies a wide, marshy flood plain with a poorly defined stream channel, approximately two miles east and downstream of Grand Forks AFB. Kellys Slough NWR is the most important regional wetland area in the Grand Forks vicinity. EO 11990 requires zero loss of wetlands. Earlier surveys indicated Grand Forks AFB had 49 wetlands, covering 23.9 acres of wetlands, including 33 jurisdictional wetlands covering 12.2 acres. A wetland delineation conducted in 2004 indicated that the base had increased to 198 wetlands, including 164 Palustrine Emergent, 31 Palustrine Scrub-Shrub, and 3 Palustrine Forested type wetlands. Vegetation is robust at GFAFB wetlands, and they are characterized as typical prairie potholes found within the northern plains ecoregion.

Wetlands on Grand Forks AFB occur frequently in drainage ways, low-lying depressions, and prairie potholes. Wetlands are highly concentrated in drainage ways leading from the wastewater treatment lagoons to Kellys Slough NWR. The majority of wetland areas occur in the northern and central portions of base, near the runway, while the remaining areas are near the eastern boundary and southeastern corner of base. Development in or near these areas must include coordination with the ND State Water Commission and the USACE. To help preserve wetlands, the North Dakota, Grand Forks County regional office of the Natural Resource Conservation Service recommends a 100-ft vegetated (grass) buffer with a perimeter filter strip.

3.6 BIOLOGICAL RESOURCES

3.6.1 Vegetation

Plants include a large variety of naturally occurring native plants. Hay land, wildlife management areas, waterfowl production areas, neighboring wildlife refuges, state parks, and conservation reserve program land have created excellent grassland and wetland habitats for wildlife in Grand Forks County. Pastures, meadows, and other non-cultivated areas create a prairie-land mosaic of grasses, legumes, and wild herbaceous plants. Included in the grasses and legumes vegetation species are tall wheat grass, brome grass, Kentucky bluegrass, sweet clover, and alfalfa. Herbaceous plants include little bluestem, goldenrod, green needle grass, western wheat grass, and bluegrama. Shrubs such as Juneberry, dogwood, hawthorn, buffaloberry, and snowberry also are found in the area. In wetland areas, predominant species include Typha sp., smartweed, wild millet, cord grass, bulrushes, sedges, and reeds. These habitats for upland wildlife and wetland wildlife attract a variety of species to the area and support many aquatic species.

Various researchers, most associated with the University of ND, have studied current native floras in the vicinity of the base. The Natural Heritage Inventory through field investigations has identified ten natural communities occurring in Grand Forks County (1994). Of these, two communities are found within base boundaries, River/Creek and Lowland Woodland. The River/Creek natural community refers to the Turtle River. This area is characterized by submergent and emergent aquatic plants, green algae, diatoms, diverse invertebrate animals such as sponges, flatworms, nematode worms, segmented worms, snails, clams, and immature and adult insects, fish, amphibians, turtles, and aquatic birds and mammals. Dominant trees in the Lowland Community include elm, cottonwood, and green ash. Dutch elm disease has killed many of the elms. European buckthorn (a highly invasive exotic species), chokecherry, and wood rose (Rosa woodsii) are common in the under story in this area. Wood nettle (Laportea canadensis), stinging nettle (Urtica dioica), beggars' ticks (Bidens frondosa), and waterleaf (Hydrophyllum viginianum) are typical forbes.

A prairie restoration project in the "Prairie View Nature Preserve" has been developed to restore a part of the native tallgrass prairie that once was dominant in this region. Plants thriving in this preserve include western wheatgrass, slender wheatgrass, big bluestem, little bluestem, Indian grass, switchgrass, blue gramma, buffalo grass, and many native wildflower species. The Grand Forks AFB Natural Resources Manager and volunteers installed a butterfly garden in the Prairie

View Nature Preserve in the fall of 2005, on National Public Lands Day. Volunteers helped plant the 1,300 square foot garden with about 50 different perennial varieties and shrubs.

Two hundred and fifty five taxa were identified in the ND Natural Heritage Inventory and the BS Bioserve biological inventory update for Grand Forks Air Force Base. Two rare orchid species are known to exist on Grand Forks AFB, the Large and Small Yellow Lady's Slipper, identified during the 2004 inventory.

3.6.2 Wildlife

Grand Forks County is agrarian in nature, however it does have many wildlife management areas, waterfowl production areas, conservation reserve program land, and recreational areas providing excellent habitat for local wildlife within the county. Kellys Slough NWR is located a couple miles northeast of Grand Forks AFB. In addition to being a wetland, it is a stopover point for thousands of migratory birds, especially shorebirds. The Prairie Chicken Wildlife Management Area is located north of Mekinock and contains 1,160 acres of habitat for deer, sharp-tailed grouse, and game birds. Wildlife can also be found at the Turtle River State Park, the Bremer Nature Trail, and the Myra Arboretum.

The base supports a remarkable diversity of wildlife given its size and location within an agricultural matrix. The Turtle River riparian corridor, Prairie View Nature Preserve, grassland areas on the west side of the base, and the lagoons to the east of the base all provide important habitat for native plant and wildlife species and should be conserved as such within mission constraints. Many mammalian species are found on base such as the white tail deer, eastern cottontail, coyotes, beaver, raccoons, striped skunks, badgers, voles, gophers, shrews, mice, muskrat, squirrels, bats, and occasional moose and bear.

One hundred seventy bird species were identified in the 2004 biological survey, many of which include grassland bird species. Grassland bird populations are declining across North America due to huge losses of prime grassland habitat from conversion to agricultural, urban, and industrial development. No other avian group has experienced such dramatic losses as grassland birds. GFAFB is fortunate to support a large variety of grassland birds, many of which are listed on the Partners-in-Flight species of concern list, such as the grasshopper sparrow. Large blocks of grassland should be conserved to protect these grassland bird species if the mission constraints allow it.

3.6.3 Threatened and Endangered Species

According to the Biological Survey Update 2004 of GFAFB, 21 state-listed birds and 1 federally listed bird species, 2 state-listed plant species, 1 state-listed mammal species, and 1 state-listed amphibian have been identified at GFAFB. The base does have infrequent use by migratory threatened and endangered species, such as the bald eagle, but there are no critical or significant habitats for those species present. Several rare and state-listed species have been observed on base near Turtle River, the lagoons, and the grassland to the west of the airfield. The ESA does require that Federal Agencies not jeopardize the existence of a threatened or endangered species nor destroy or adversely modify designated critical habitat for threatened or endangered species.

3.7 SOCIOECONOMIC RESOURCES

Grand Forks County is primarily an agricultural region and, as part of the Red River Valley, is one of the worlds most fertile. Cash crops include sugar beets, beans, corn, barley, and oats. The valley ranks first in the nation in the production of potatoes, spring wheat, sunflowers, and durum wheat. Grand Forks County's population in 2000 was 66,109, a decrease of 6.5 percent from the 1990 population of 70,638 (ND State Data Center, No Date). Grand Forks County's annual mean wage in Oct 2001 was $26,715 (Job Service of ND, 2001). Grand Forks AFB is one of the largest employers in Grand Forks County. As of Sep 2004, Grand Forks AFB had 2,928 active duty military members and 380 civilian employees. The total annual economic impact for Grand Forks AFB is $379,000,000.

3.8 CULTURAL RESOURCES

According to the Grand Forks AFB Cultural Resources Management Plan, there are no archeological sites that are potentially eligible for the National Register of Historic Places (NRHP). A total of six archeological sites and six archeological find spots have been identified on the base. None meet the criteria of eligibility of the NRHP established in 36 CFR 60.4. There is no evidence for Native American burial grounds, or other culturally sensitive areas. Paleosols (soil that developed on a past landscape) remain a management concern requiring Section 106 compliance. Reconnaissance-level archival and archeological surveys of Grand Forks AFB conducted by the University of ND in 1989 indicated that there are no facilities (50 years or older) that possess historical significance. The base is currently consulting with the ND Historical Society on the future use of eight Cold War Era facilities. These are buildings 313, 606, 703, 704, 705, 706, 707, and 714.

3.9 LAND USE

Land use in Grand Forks County consists primarily of cultivated crops with remaining land used for pasture and hay, urban development, recreation, and wildlife habitat. Principal crops are spring wheat, barley, sunflowers, potatoes, and sugar beets. Turtle River State Park, developed as a recreation area in Grand Forks County, is located about five miles west of the base. Several watershed protection dams are being developed for recreation activities including picnicking, swimming, and ball fields. Wildlife habitat is very limited in the county. Kellys Slough NWR (located about two miles east of the base) and the adjacent National Waterfowl Production Area are managed for wetland wildlife and migratory waterfowl, but they also include a significant acreage of open land wildlife habitat.

The main base encompasses 5,420 acres, of which the USAF owns 4,830 acres and another 590 acres are lands containing easements, permits, and licenses. Improved grounds, consisting of all covered area (under buildings and sidewalks), land surrounding base buildings, the 9-hole golf course, recreational ball fields, and the family housing area, encompass 1,120 acres. Semi-improved grounds, including the airfield, fence lines and ditch banks, skeet range, and riding stables account for 1,390 acres. The remaining 2,910 acres of the installation consist of unimproved grounds. These areas are comprised of woodlands, open space, and wetlands,

including four lagoons (180.4 acres) used for the treatment of base wastewater. Agricultural out leased land (1,040 acres) is also classified as unimproved. Land use at the base is solely urban in nature, with residential development to the south and cropland, hayfields, and pastures to the north, west, and east of the base.

3.10 TRANSPORATION SYSTEMS

Seven thousand vehicles per day travel ND County Road B3 from Grand Forks AFB's east gate to the US Highway 2 Interchange (Clayton, 2001). Two thousand vehicles per day use the off-ramp from US Highway 2 onto ND County Road B3 (Dunn, 2001). US Highway 2, east of the base interchange, handles 10,800 vehicles per day. (Kingsley and Kuntz, 2001). A four lane arterial road has a capacity of 6,000 vehicles per hour and a two lane, 3,000, based on the average capacity of 1,500 vehicles per hour per lane. Roadways adjacent to Grand Forks AFB are quite capable of accommodating existing traffic flows (USAF, 2001a).

Grand Forks AFB has good traffic flow even during peak hours (6-8 am and 4-6 pm). There are two gates: the main gate located off of County Road B3, about one mile north of U.S. Highway 2 and the Secondary Gate located off of U.S. Highway 2, about 3/4 mile west of County Road B3. The main gate is connected to Steen Boulevard (Blvd), which is the main east-west road, and serves the passenger traffic; and the south gate is connected to Eielson Street (St), which is the main north-south road and serves the truck traffic.

3.11 AIRSPACE/AIRFIELD OPERATIONS

3.11.1 Aircraft Safety

Bird Aircraft Strike Hazard (BASH) is a major safety concern for military aircraft. Collision with birds may result in aircraft damage and aircrew injury, which may result in high repair costs or loss of the aircraft. A BASH hazard exists at Grand Forks AFB and its vicinity, due to resident and migratory birds. Daily and seasonal bird movements create various hazardous conditions. Although BASH problems are minimal, Kellys Slough NWR is a major stopover for migratory birds. Canadian Geese and other large waterfowl have been seen in the area (USAF, 2001b).

3.11.2 Airspace Compatibility

The primary objective of airspace management is to ensure the best possible use of available airspace to meet user needs and to segregate requirements that are incompatible with existing airspace or land uses. The Federal Aviation Administration has overall responsibility for managing the nation's airspace and constantly reviews civil and military airspace needs to ensure all interests are compatibly served to the greatest extent possible. Airspace is regulated and managed through use of flight rules, designated aeronautical maps, and air traffic control procedures and separation criteria.

3.12 SAFETY AND OCCUPATIONAL HEALTH

Safety and occupational health issues include one-time and long-term exposure. Examples include asbestos/radiation/chemical exposure, explosives safety quantity-distance, and bird/wildlife aircraft hazard. Safety issues include injuries or deaths resulting from a one-time accident. Aircraft Safety includes information on birds/wildlife aircraft hazards and the BASH program. Health issues include long-term exposure to chemicals such as asbestos and lead-based paint. Safety and occupational health concerns could impact personnel working on the project and in the surrounding area.

The National Emission Standards for Hazardous Air Pollutants (NESHAP) of the CAA designates asbestos as HAP. OSHA provides worker protection for employees who work around or asbestos containing material (ACM). Regulated ACM (RACM) includes thermal system insulation (TSI), any surfacing material, and any friable asbestos material. Non-regulated Category I non-friable ACM includes floor tile and joint compound.

Lead exposure can result from paint chips or dust or inhalation of lead vapors from torch-cutting operations. This exposure can affect the human nervous system. Due to the size of children, exposure to lead based paint is especially dangerous to small children. OSHA considers all painted surfaces in which lead is detectable to have a potential for occupational health exposure.

3.13 ENVIRONMENTAL MANAGEMENT

3.13.1 Environmental Restoration Program

The Environmental Restoration Program (ERP) is the AF's environmental restoration program based on the CERCLA. CERCLA provides for Federal agencies with the authority to inventory, investigate, and clean up uncontrolled or abandoned hazardous waste sites. There are seven ERP sites at Grand Forks AFB. These sites are identified as potentially impacted by past hazardous material or hazardous waste activities. They are the Fire Training Area/Old Sanitary Landfill Area, FT-02; New Sanitary Landfill Area, LF-03; Strategic Air Ground Equipment (SAGE) Building 306, ST-04; Explosive Ordnance Detonation Area, OT-05; Refueling Ramps and Pads, Base Tanks Area, ST-06; POL Off-Loading Area, ST-07; and Refueling Ramps and Pads, ST-08 (USAF, 1997b). Two sites are considered closed, OT-05 and ST-06. ST-08 has had a remedial investigation/feasibility study (RI/FS) completed and the rest are in long-term monitoring. Grand Forks AFB is not on the National Priorities List (NPL)

3.13.2 GEOLOGICAL RESOURCES

3.13.2.1 Physiography and Topography

The topography of Grand Forks County ranges from broad, flat plains to gently rolling hills that were produced mainly by glacial activity. Local relief rarely exceeds 100 ft in one mile, and, in parts of the lake basin, less than five ft in one mile.

Grand Forks AFB is located within the Central Lowlands physiographic province. The topography of Grand Forks County, and the entire Red River Valley, is largely a result of the former existence of Glacial Lake Agassiz, which existed in this area during the melting of the

last glacier, about 12,000 years ago (Stoner et al., 1993). The eastern four-fifths of Grand Forks County, including the base, lies in the Agassiz Lake Plain District, which extends westward to the Pembina escarpment in the western portion of the county. The escarpment separates the Agassiz Lake Plain District from the Drift Plain District to the west. Glacial Lake Agassiz occupied the valley in a series of recessive lake stages, most of which were sufficient duration to produce shoreline features inland from the edge of the lake. Prominent physiographic features of the Agassiz Lake Plain District are remnant lake plains, beaches, inter-beach areas, and delta plains. Strandline deposits, associated with fluctuating lake levels, are also present and are indicated by narrow ridges of sand and gravel that typically trend northwest-southwest in Grand Forks County.

Grand Forks AFB lies on a large lake plain in the eastern portion of Grand Forks County. The lake plain is characterized by somewhat poorly drained flats and swells, separated by poorly drained shallow swells and sloughs (Doolittle et al., 1981). The plain is generally level, with local relief being less that one foot. Land at the base is relatively flat; with elevations ranging from 880 to 920 ft mean sea level (MSL) and averaging about 890 ft MSL. The land slopes to the north at less than 12 ft per mile.

3.13.2.2 Soil Type Condition

Soils consist of the Gilby loam series that are characterized by deep, somewhat poorly drained, moderately to slowly permeable soils in areas between beach ridges. The loam can be found from 0 to 12 inches. From 12 to 26 inches, the soil is a mixture of loam, silt loam, and very fine sandy loam. From 26 to 60 inches, the soil is loam and clay loam.

3.13.3 Pesticide Management

Pesticides are handled at various facilities including Environmental Controls, Golf Course Maintenance, and Grounds Maintenance. Other organizations assist in the management of pesticides and monitoring or personnel working with pesticides. Primary uses are for weed and mosquito control. Herbicides, such as picloram, nonselective glyphosate and 2, 4-D are used to maintain areas on base. Military Public Health and Bioenvironmental Engineering provide information on the safe handling, storage, and use of pesticides. Military Public Health maintains records on all pesticide applicators. The Fire Department on-base provides emergency response in the event of a spill, fire, or similar type incident.

3.14 ENVIRONMENTAL JUSTICE

Environmental justice addresses the minority and low-income characteristics of the area, in this case Grand Forks County. The county is more than 93 percent Caucasian, 2.3 percent Native American, 1.4 percent African-American, 1 percent Asian/Pacific Islander, less than 1 percent Other, and 1.6 percent “Two or more races”. In comparison, the US is 75.2 percent Caucasian, 12.3 African-American, 0.9 percent Native American or Native Alaskan, 3.6 percent Asian, 0.1 Native Hawaiian or Pacific Islander, 5.5 percent Other, and 2.4 percent “Two or more races”. Approximately 12.5 percent of the county’s population is below the poverty level in comparison to 13.3 percent of the state (US Bureau of the Census, 2002). There are few residences and no

concentrations of low-income or minority populations around Grand Forks AFB.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

The effects of the proposed action and the alternatives on the affected environment are discussed in this section. The project involves landscaping of multiple projects on Grand Forks AFB.

4.2 AIR QUALITY

4.2.1 Alternative 1 (No Action)

The no action alternative would not impact air quality.

4.2.2 Alternatives 2 (Proposed Action)

Short term effects involve heavy construction equipment emissions (not a concern as they are mobile sources) and fugitive dust (mentioned on our Title V permit). Air Quality is considered good and the area is in attainment for all criteria pollutants. Fugitive emissions from construction activities are expected to be below the regulatory threshold and would be managed in accordance with NDAC 33-15-17-03. Best management practices (BMPs) to reduce fugitive emissions would be implemented to reduce the amount of these emissions. Over the long term, planting trees and shrubs would improve air quality in the area as trees act as filtering mechanisms. Trees can remove significant levels of CO_2 from the air. Heat from earth is trapped in the atmosphere due to high levels of carbon dioxide (CO_2) and other heat-trapping gases that prohibit it from releasing heat into space -- creating a phenomenon known as the "greenhouse effect." Trees remove (sequester) CO_2 from the atmosphere during photosynthesis to form carbohydrates that are used in plant structure/function and return oxygen back to the atmosphere as a byproduct. About half of the greenhouse effect is caused by CO_2. Trees therefore act as a carbon sink by removing the carbon and storing it as cellulose in their trunk, branches, leaves and roots while releasing oxygen back into the air. Trees also remove other gaseous pollutants by absorbing them with normal air components through the stomates in the leaf surface. As an example, one large front yard tree absorbs 10 lbs of air pollutants, including 4 lbs of ozone and 3 lbs of particulates. In addition, uptake of NOx by a large front yard tree is equivalent to NOx emitted by a typical car driven 3,600 miles.

4.2.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.3 NOISE

4.3.1 Alternative 1 (No Action)

The no action alternative would not impact noise generation.

4.3.2 Alternative 2 (Proposed Action)

The short-term operation of heavy equipment in the landscape area would generate additional noise. These noise impacts would exist only during operations and would cease after completion. The increase in noise from activities would not be significant.

4.3.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.4 WASTES, HAZARDOUS MATERIALS, AND STORED FUELS

4.4.1 Alternative 1 (No Action)

The no action alternative would not impact hazardous or solid waste generation.

4.4.2 Alternative 2 (Proposed Action)

All efforts to consider the use of Green Procurement Program (GPP) for applicable purchase of landscape material, edging, brick, mulch, and other recycled materials shall be implemented. The increase in hazardous and solid wastes from landscaping multiple projects would be temporary. A small amount of debris would be generated. Solid waste debris would be disposed of in approved location, such as the Grand Forks Municipal Landfill, which is located within 12 miles of the proposed site. All measures will be taken to minimize the disturbance of any asbestos-containing material and prevent any asbestos fiber release episodes in all areas. Removal of any friable asbestos-containing material will be accomplished in accordance with section 33-15-13-02 of the North Dakota air pollution control rules. All solid waste materials would be managed and transported in accordance with the state's solid and hazardous waste rules. Appropriate efforts to reduce, reuse and/or recycle waste materials are encouraged by the State of North Dakota. Inert waste should be segregated from non-inert waste, where possible, to reduce the cost of waste management.

In the event there is contact with surfaces covered with lead-based paint, the removal of lead-based paint would be properly handled to reduce or prevent exposing workers and building occupants to lead. The materials must be handled by properly trained individuals for removal and disposal.

Tree roots must not impact OWSs, USTs, UST piping, vapor probes, or groundwater monitoring wells. The distance a tree or shrub should be planted away from the structure depends on the anticipated root development of the respective plant. For instance, if a tree has a projected 50 ft root system, it needs to be planted more than 50 ft from the existing monitoring wells and vapor probes.

Maps of the monitoring well locations in the Library/ADC area and POL/501 area are enclosed in Appendix C. Maps of the flush-mount soil-vapor probes located around Eielson and 1st Ave and south of the Vet Clinic are enclosed in Appendix C. These monitoring wells and vapor

probes cannot be impacted by the root systems of new trees and shrubs. There needs to be close coordination and planning done on the Green Plan projects west of the Library, south of the Vet Clinic and throughout the POL/501 area on Eielson Street to ensure that proper plants are selected.

4.4.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.5 WATER RESOURCES

4.5.1 Alternative 1 (No Action Alternative)

The no action alternative would have no impact on groundwater, surface water, wastewater, water quality, or wetlands.

4.5.2 Alternative 2 (Proposed Alternative)

Groundwater: Excavation during planting and removal would most probably not intercept the water table. If the excavated area fills with surface water which is contaminated by materials used during construction, groundwater could be exposed to contaminants by infiltration. Provided best management practices are followed, there would be minimal impacts to ground water.

Surface Water: Surface water quality could degrade in the short-term, during actual work, due to possible erosion contributing to turbidity of runoff and due to possible contamination from spills or leaks from equipment. Surface water could be impacted if, due to storm water inflow to the excavations, the operators would need to pump out the excavation. The operator shall utilize effective methods to control surface water runoff and to minimize erosion. Proper stabilization and seeding the site immediately upon completion of the planting, and the planted shrubs/trees themselves will provide beneficial vegetation to control erosion. Provided best management practices are utilized during construction, negative surface water impacts should be minimal. The use of xeriscaping practices, using low maintenance, low water-usage plants, should minimize the use of water during growing and maintenance seasons.

Wastewater: The proposed action would have no impact on wastewater.

Water Quality: Provided all containment needs are met and best management practices are used, the proposed action would have minimal impact to water quality.

4.5.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.6 BIOLOGICAL RESOURCES

4.6.1 Alternative 1 (No Action)

The no action alternative would not impact wildlife, vegetation, or other biological resources.

4.6.2 Alternative 2 (Proposed Action)

Vegetation: BMPs and control measures, including covering of stockpiles and drain openings, would be implemented to ensure that impacts to biological resources be kept to a minimum. The amount of vegetation disturbed would be kept to the minimum required to complete the action. Disturbed areas should be re-established. There would be a short-term minimal loss of vegetation from landscaping activities. Improved areas should remain on the grounds maintenance contract for mowing. Any existing vegetation removed and not planned for reinstallment should be relocated as a design requirement of the project. Over the long term, the green plan shall improve vegetation quality and abundance on the base. Planting trees and shrubs provide many positive benefits to the base. Planting a variety of trees and shrubs shall improve species diversity and protect the Base against blight and disease. Landscaping with trees and shrubs can offer suitable mini-climates for other plants that could otherwise be absent from urban areas. Biodiversity is an important part of the urban forestry.

Tree shade improves pavement performance. Better pavement performance translates into reduced maintenance and repair costs, and results in decreased total life cycle costs. The economic benefits are increased pavement durability and reduced maintenance costs associated with increased tree shade and their effect on pavement performance. As the cost of constructing new pavements increases, the need to protect current investments grows and justifies the retention of healthy urban forests.

Noxious Weeds: Public law 93-629 mandates control of noxious weeds. Limit possible weed seed transport from infested areas to non-infested sites. Avoid activities in or adjacent to heavily infested areas, or remove seed sources and propagules from site prior to conducting activities, or limit operations to non-seed producing seasons. Wash or otherwise remove all vegetation and soil from equipment before transporting to a new site. Mitigate activities which expose the soil by covering the area with weed seed free mulch and/or seed the area with native species. Covering the soil will reduce the germination of weed seeds, maintain soil moisture, and minimize erosion. If any fill material is used, it should be from a weed-free source.

Wildlife: Landscaping would have minimal impacts to wildlife. These areas provide foraging habitat for small mammals, such as mice and rabbits. The area is improved and frequently maintained by the grounds maintenance contractor. Due to the abundance and mobility of these species and the profusion of similar landscaped areas in the general vicinity, any wildlife disturbed would be able to find similar habitat in the local area. There will be positive impacts to vegetation for improving existing diversity of species. Some projects such as the shelterbelt projects will also add improved wildlife habitat.

Threatened or Endangered Species: According to the Biological Surveys of 1994 and 2004, and bird surveys of 2001, 2004, and 2005, Grand Forks AFB has 56 bird species of concern: 1 federally threatened, 8 state-threatened and endangered, 29 state species of concern, 17 USFWS

birds of conservation concern, and 22 DOD partners-in-flight species. In addition, referencing the 1994 and 2004 biological surveys, there are 2 state threatened plant species, 1 state species of concern for mammals, and 1 state species of concern for amphibians identified at GFAFB. The federally listed bird species (the Bald Eagle) has no critical habitat at GFAFB. Proposed activities should have no impact on these sensitive species, given all proposed actions are associated with buildings or areas that are located in a well traveled area.

Wetlands: Some landscaping plans are adjacent to wetland areas, and some appear to be in wetland areas. Landscaping activities should avoid planting in any wetland areas. If landscaping is necessary in some of the wetland areas, appropriate permits shall be necessary. Of particular note regarding projects and wetlands is the, Landscape/Screen RV lot, and the Erosion Control project. Activity in any wetlands cannot occur without a Clean Water Act section 404 permit from the Army Corps of Engineers. No dumping, filling, dredging, or changing of the wetland hydrologic structure is permitted without a permit.

4.6.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.7 SOCIOECONOMIC RESOURCES

4.7.1 Alternative 1 (No Action)

The no action alternative would not impact socioeconomics.

4.7.2 Alternative 2 (Proposed Action)

Secondary retail purchases would make an additional contribution to the local communities. The implementation of the proposed action, therefore, would provide a short-term, minimal beneficial impact to local retailers during the construction phase of the project. There would be no long term impact to socioeconomic resources.

4.7.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.8 CULTURAL RESOURCES

4.8.1 Alternative 1 (No Action)

The no action alternative would not impact cultural resources.

4.8.2 Alternative 2 (Proposed Action)

Buildings listed on the “Green Plan” are not among the buildings that are National Register eligible. The proposed action has little potential to impact cultural resources. In the unlikely event any such artifacts were discovered during the construction activities, the contractor would

be instructed to halt construction and immediately notify Grand Forks AFB civil engineers who would notify the State Historic Preservation Officer.

4.8.3 Alternative 3

Alternative impacts would be similar to those generated under the proposed action.

4.9 LAND USE

4.9.1 Alternative 1 (No Action)

The no action alternative would not have an impact on land use.

4.9.2 Alternative 2 (Proposed Action)

The proposed operation would not have an impact on this land use currently designated for each project area.

4.9.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.10 TRANSPORTATION SYSTEMS

4.10.1 Alternative 1 (No Action)

The action would not impact transportation.

4.10.2 Alternative 2 (Proposed Action)

The proposed action would have minimal adverse impact to transportation systems on base due to vehicles traveling to and from areas during landscape operations.

4.10.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.11 AIRSPACE/AIRFIELD OPERATIONS

4.11.1 Alternative 1 (No Action)

The no action alternative would not impact aircraft safety or airspace compatibility.

4.11.2 Alternative 2 (Proposed Action)

The proposed action would not impact aircraft safety or airspace compatibility.

4.11.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.12 SAFETY AND OCCUPATIONAL HEALTH

4.12.1 Alternative 1 (No Action)

The no action alternative would not impact safety and occupational health.

4.12.2 Alternative 2 (Proposed Action)

The proposed action would have no significant impact on safety and occupational health if the Architectural Compatibility Guidelines (ACG) for berms, crosswalks and intersections are followed. There is a 30-50 ft sight line triangle guideline for planting at corners. The corner of Steen and Holzapple is an example. First the low lying shrubs are planted, then the day lilies, and then a taller shrub or tree. The trees or shrubs must be pruned (or removed) if they obstruct the vision of a driver sitting at car level. .Since berms and trees near the street reduce the ability of drivers to observe traffic, landscaping cannot block the vision of drivers.

Construction of pedestrian sidewalks through a berm must be so constructed that they do not angle down toward the street traffic. During icy winter conditions, a slip would put a person into the traffic lane. Design of a sidewalk cut through a berm must take safety into consideration. ACG states that the slope of a berm should not exceed 25 to 30%. Community Planning must take safety comments into consideration and coordinate the designs with them in the future. An excerpt of the CES in-house ACG concerning sightline triangles, berms, crosswalks and intersections is included in Appendix E. Participants in constructions and landscape installation are required to wear appropriate personnel protective equipment (PPE).

Currently, due to BRAC policy, all new landscaping projects have been put on hold for funding. The only landscaping projects the base can currently do is remove existing trees and replace in the general vicinity, or those projects that would help an existing erosion problem – basically sustainment. The Green Plan has extremely conceptual drawings (currently 10% design) so there is ample room for change The projects within the Green Plan will probably occur within the next ten years. Safety reserves the right to comment pending review of the individual projects as they become available for funding and execution.

4.12.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.13 ENVIRONMENTAL MANAGEMENT

4.13.1 Alternative 1 (No Action)

The no action alternative would not impact ERP Sites or geological resources.

4.13.2 Alternative 2 (Proposed Action)

ERP: The proposed action would not impact ERP Sites.

Geology: The proposed action would not impact geological resources. Soils present in the proposed area include the Gilby series.

Pesticides: Pesticides would be used during the landscape projects. All weeds and grass in shrubs, plant beds and landscaped areas shall be removed and may be followed by chemical treatment if necessary. The use of chemicals in landscaped areas is done at the contractors risk as any damaged plants will be replaced at contractor's expense. A selective use herbicide containing 2-4-D or a low rate glyphosate is likely to be utilized under the maintenance phase of the plan. All herbicide usage on the installation is pre-approved and authorized under the Environmental Management Information System and the DoD Pesticide Standard Pesticide list. All applicators are certified in herbicide application.

4.13.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.14 ENVIRONMENTAL JUSTICE

4.14.1 Alternative 1 (No Action)

The no action alternative would not impact environmental justice.

4.14.2 Alternative 2 (Proposed Action)

EO 12898 requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. There are no minority or low-income populations in the area of the proposed action or alternatives, and, thus, there would be no disproportionately high or adverse impact on such populations.

4.14.3 Alternative 3

Impacts would be similar to those generated under the proposed action.

4.15 INDIRECT AND CUMULATIVE IMPACTS

Positive impacts include direct cost savings by decreasing heating bills during the winter and cooling bills in the summer. Trees can reduce the temperature in their immediate vicinity by up to 5° C from shading alone. More vegetation lowers air temperature, reducing the need for air-conditioning and lowering energy consumption.

Shelterbelts in the Northern plains protect against high winds providing essential wildlife habitat, provide dust control and noise abatement, and improve aesthetics. These landscape features can improve energy conservation, provide buffer strips between land uses, trap sediment and reduce runoff, and store carbon. The out-of-sync carbon cycle is considered highly important in combating the effects of global warming, and storing carbon by planting conservation strips can contribute to its restoration.

The short-term increases in air emissions and noise during landscaping and the impacts predicted for other resource areas, would not be significant when considered cumulatively with other ongoing and planned activities at Grand Forks AFB and nearby off-base areas. The cumulative impact of the Proposed Action or Alternative with other ongoing activities in the area would produce an increase in solid waste generation; however, the increase would be limited to the timeframe of each project. The area landfills used for construction and construction debris do not have capacity concerns, and could readily handle the solid waste generated by the various projects.

4.16 UNAVOIDABLE ADVERSE IMPACTS

The proposed action and alternatives would involve the use of landscape related vehicles, and their short-term impacts on noise, air quality, and traffic are unavoidable.

4.17 RELATIONSHIP BETWEEN SHORT-TERM USES AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed action and alternatives would involve the use of previously developed areas. No croplands, pastureland, wooded areas, or wetlands would be modified or affected as a result of implementing the Proposed Action and, consequently, productivity of the area would not be degraded.

4.18 IRREVERSIVLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Under the proposed action, fuels, manpower, economic resources, and other recovery materials related to the landscape of multiple areas would be irreversibly lost.

5.0 LIST OF PREPARERS

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319 CES/CEVP
Grand Forks AFB ND 58205

6.0 LIST OF AGENCIES AND PERSONS CONSULTED AND/OR PROVIDED COPIES

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State Health Officer
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600 East Boulevard Ave
Bismarck, ND 58505-0200

Mr. Terry Steinwand
Commissioner
North Dakota Game and Fish
100 North Bismarck Expressway
Bismarck, ND 58501

Mr. Jeffrey Towner
U.S. Fish & Wildlife Service
3425 Miriam Avenue
Bismarck ND 58501

Mr. Merlan E. Paaverud
State Historic Preservation Officer
State Historical Society of North Dakota
612 East Boulevard Ave
Bismarck ND 58505-0200

Mr. Larry Knudtson, Planning
North Dakota State Water Commission
900 E Boulevard Ave, Dept 770
Bismarck ND 58505-0850

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http://www.olivebranches.org/about_BenefitsofPlantingTrees.htm
http://www.epa.gov/heatisland/strategies/level3_vegairquality.html

American Forests, P.O. Box 2000, Washington DC 20013. Phone: 202/955-4500; Fax: 202/955-4588, E-mail: cgreen@amfor.org. Website: www.americanforests.org

Georgia Forestry Commission, Urban & Community Forestry Program, P.O. Box 819, Macon, GA 31202-0819, Phone: 800-GA-TREES, Website: www.gfc.state.ga.us

A research project conducted by Gregory McPherson and Jules Muchnick of the USDA Forest Service, Pacific Southwest Research Station's Center for Urban Forest Research in Davis, California, studied the effects of street tree shade on pavement performance. Complete details of this project can be found in the November 2005 issue of the Journal of Arboriculture, of the International Society of Arboriculture. Jackson Bird, NDFS, 1511 E. Interstate Avenue, Bismarck, ND 58503, Phone 701-328-9945, Fax 701-328-9947.

APPENDIX A
LOCATION MAP – GRAND FORKS AFB

Grand Forks AFB, ND

Location Map

State Boundary

APPENDIX B
CULTURAL RESOURCE PROBABILITY MAP

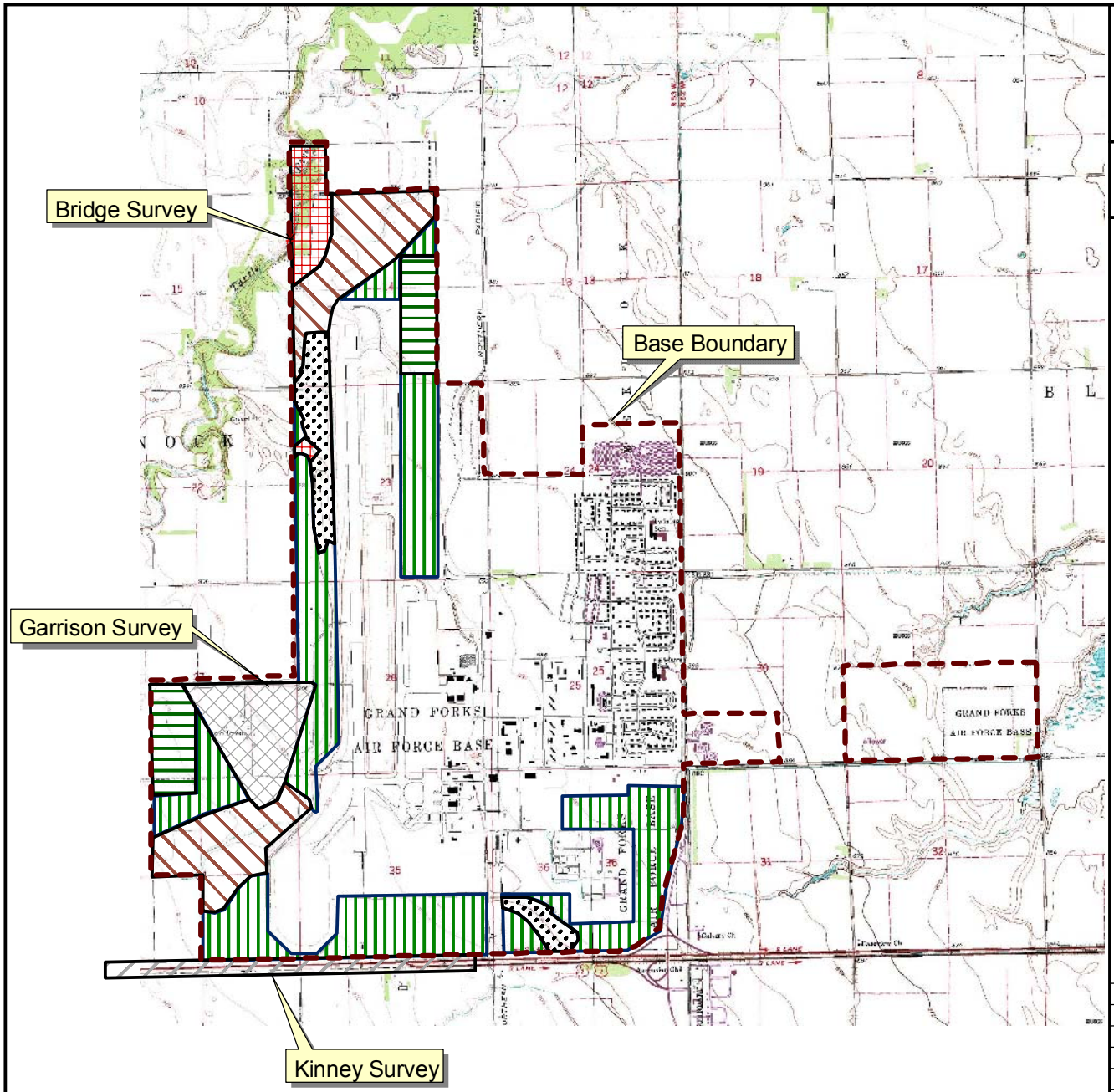

Figure 3.5
Survey Areas and Probabilities

Grand Forks Air Force Base
Cultural Resources Management Plan

Legend

- Historic Bridge Inventory Survey
- Base Boundary
- High Probability
- Medium Probability (near water)
- Kinney Survey
- Medium Probability (beach ridge)
- Peace Keeper Rail Garrison Survey
- Low Probability (distance from water)
- Low Probability (10% sample)
- Previously Disturbed

2000 0 2000 4000 Feet

Scale:	1:50000
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APPENDIX C
ENVIRONMENTAL SITE MAP
MONITORING WELL AND SOIL-VAPOR PROBE LOCATION MAP

Grand Forks AFB Environmental Sites (SE)

- Above Ground Storage Tanks (Fuel)
- Abandoned Fuel Lines
- Building 622 - Acid Dip Room
- Helecopter Wash Area
- Oil/Water Separator
- Satellite Accumulation Areas (Haz Waste)
- Scrap Storage Area
- S.H.P.O. (Buildings under consideration)
- Underground Waste Storage
- Underground Storage Tanks (Fuel)
- Ditches/Streams
- IRP Sites
- Landfill Caps
- Trees

Hydrography-flood zone area

- floodplain zone centroid

N

08 May 01/KS

Grand Forks AFB Environmental Sites (NE)

- Above Ground Storage Tanks (Fuel)
- Abandoned Fuel Lines
- Building 622 - Acid Dip Room
- Helecopter Wash Area
- Oil/Water Separator
- Satellite Accumulation Areas (Haz Waste)
- Scrap Storage Area
- S.H.P.O. (Buildings under consideration)
- Underground Waste Storage
- Underground Storage Tanks (Fuel)
- Ditches/Streams
- IRP Sites
- Landfill Caps
- Trees

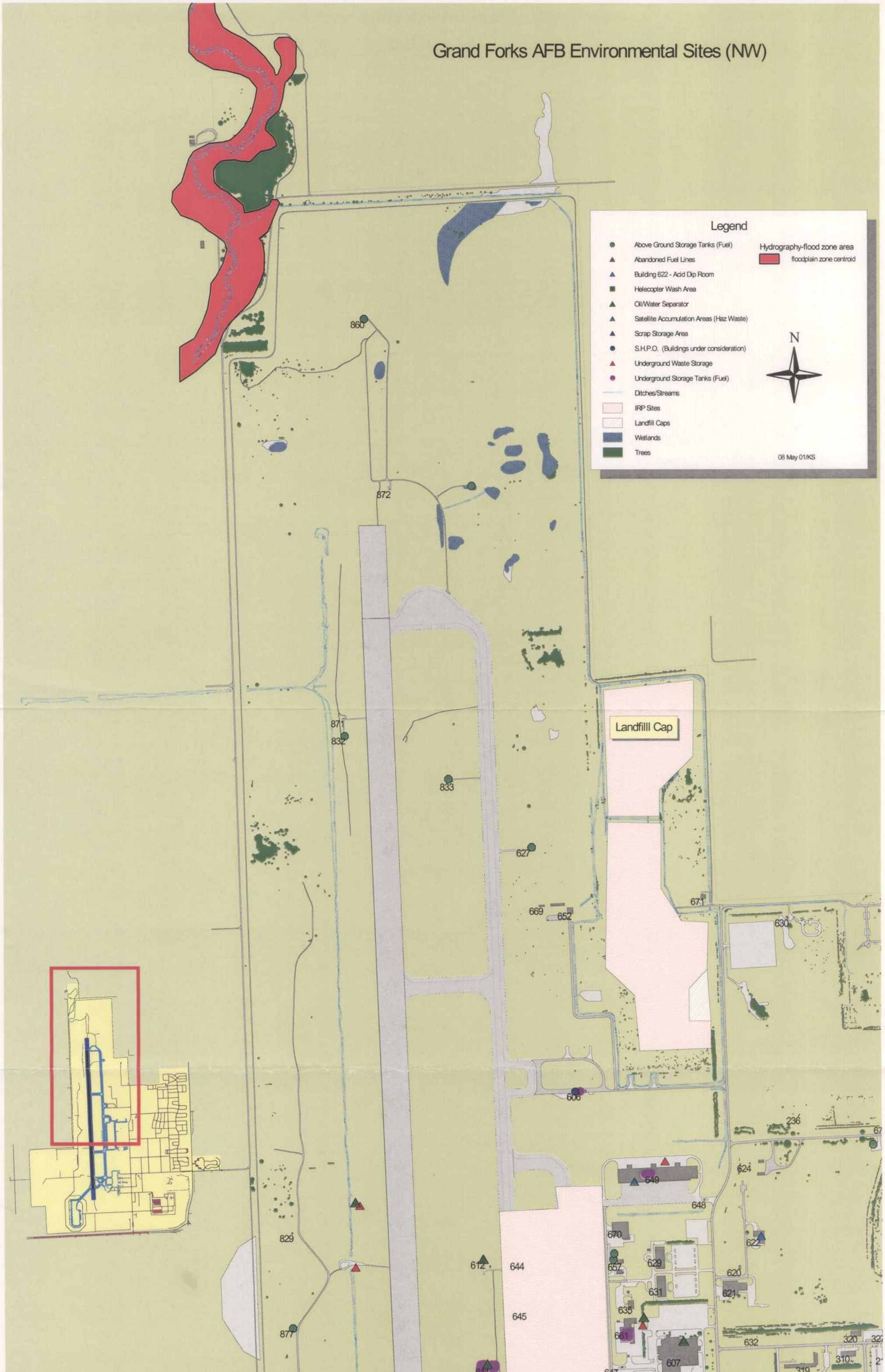
Hydrography-flood zone area

floodplain zone centroid

N

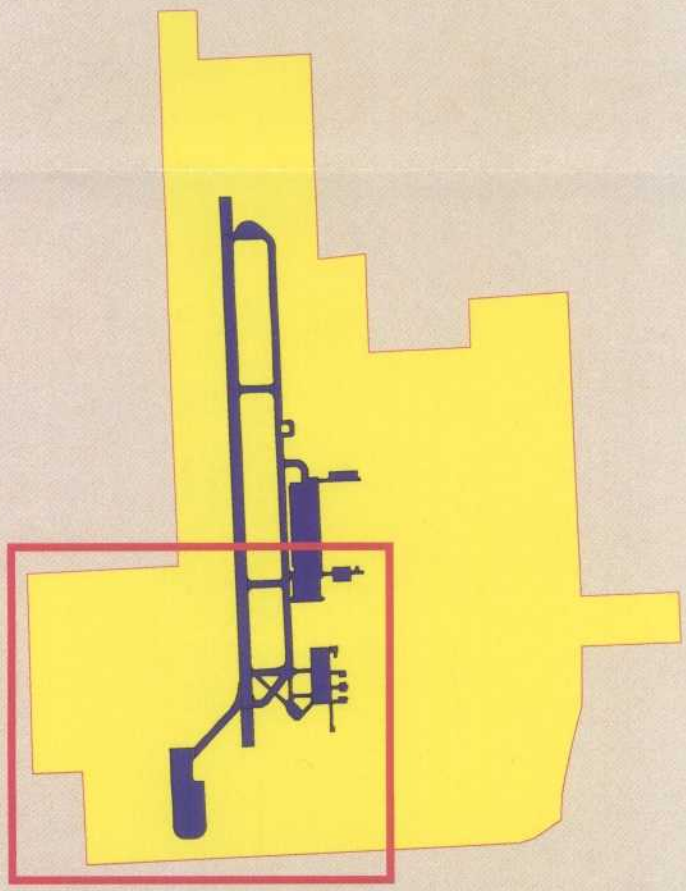
08 May 01/KS

Grand Forks AFB Environmental Sites (NW)



INERT SOLID WASTE LANDFILL

LAND TREATMENT FACILITY



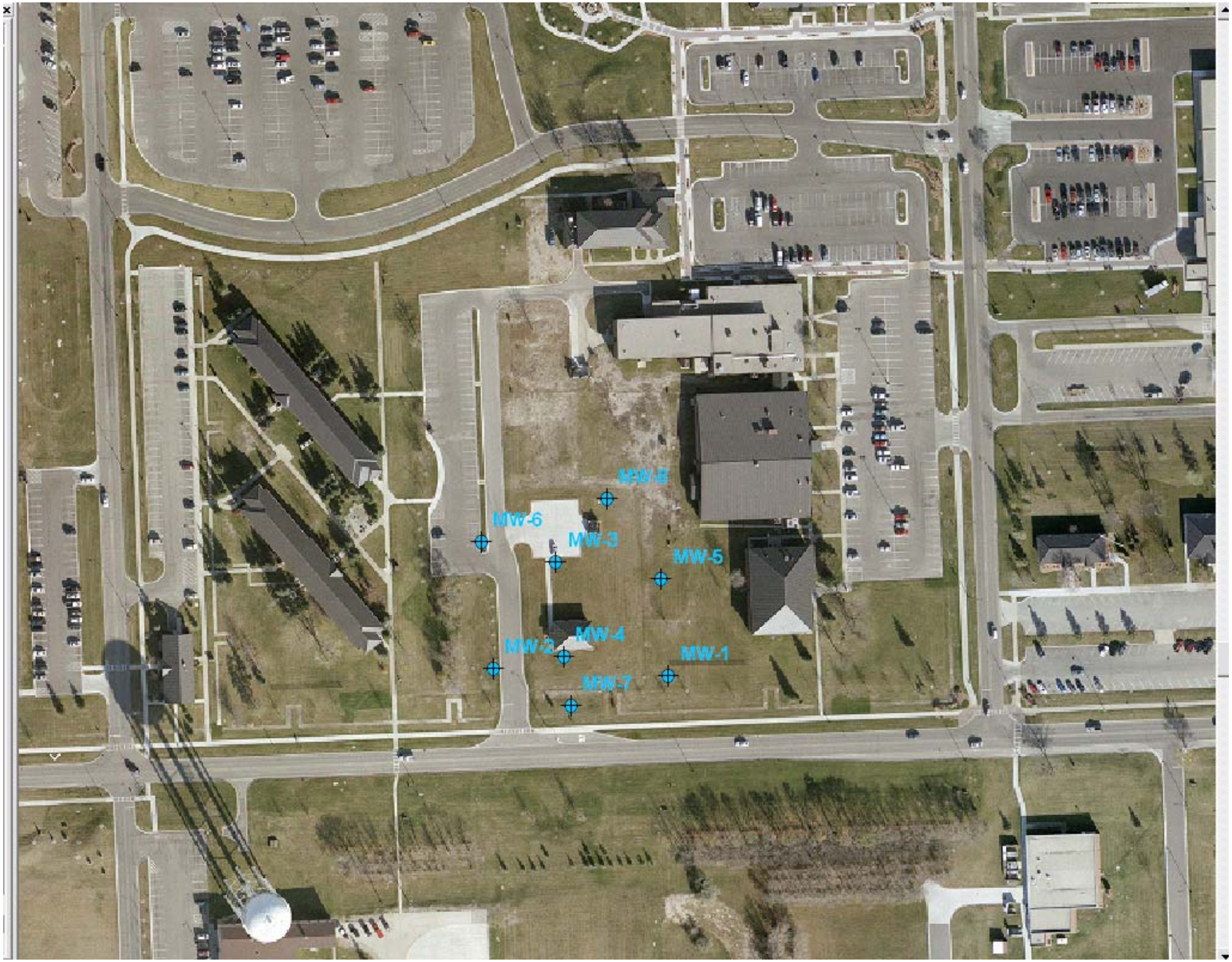
Grand Forks AFB Environmental Sites (SW)

- Above Ground Storage Tanks (Fuel)
- Abandoned Fuel Lines
- Building 622 - Acid Dip Room
- Helecopter Wash Area
- Oil/Water Separator
- Satellite Accumulation Areas (Haz Waste)
- Scrap Storage Area
- S.H.P.O. (Buildings under consideration)
- Underground Waste Storage
- Underground Storage Tanks (Fuel)
- Ditches/Streams
- IRP Sites
- Landfill Caps
- Trees
- Wetlands

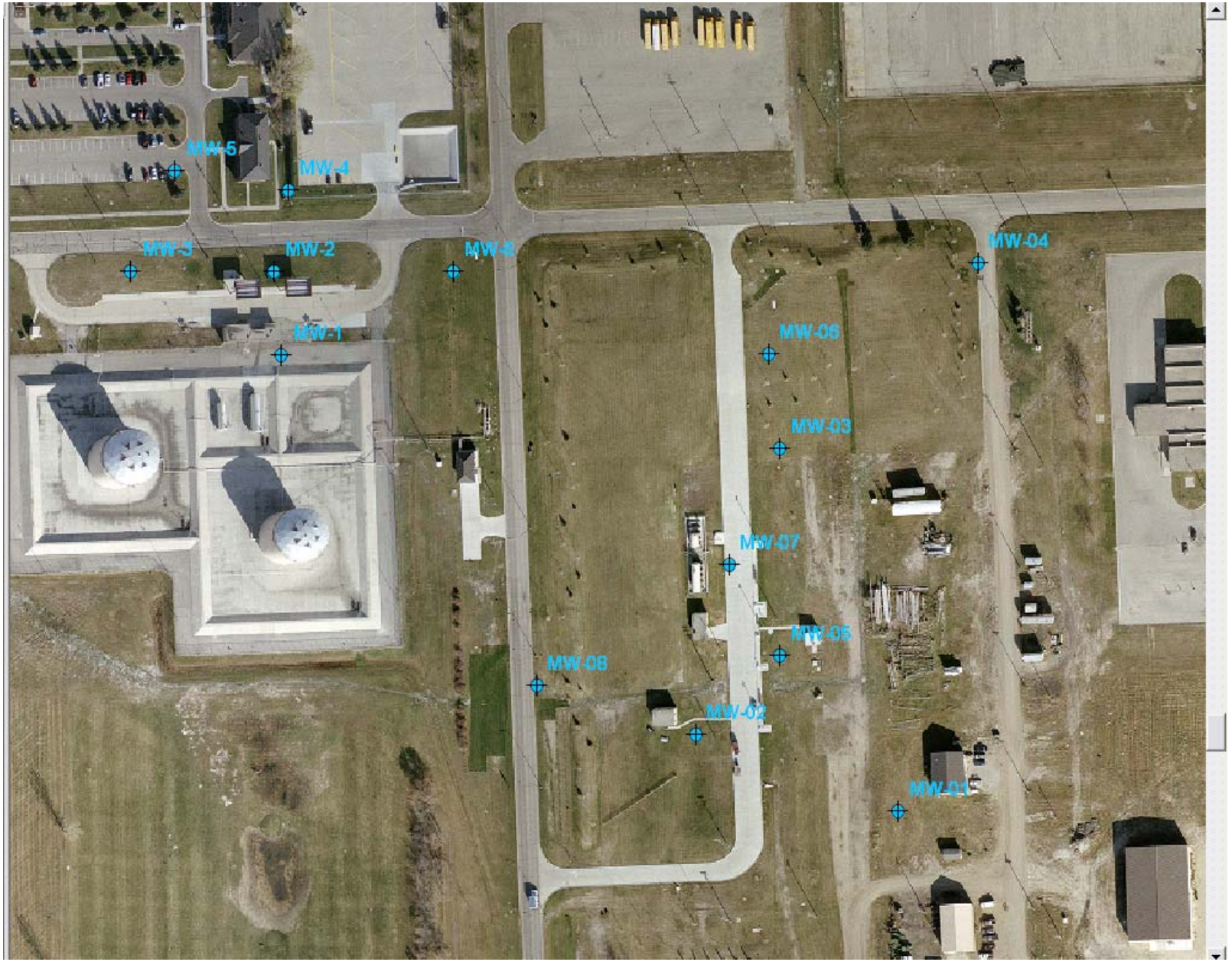
Hydrography-flood zone area

- floodplain zone centroid

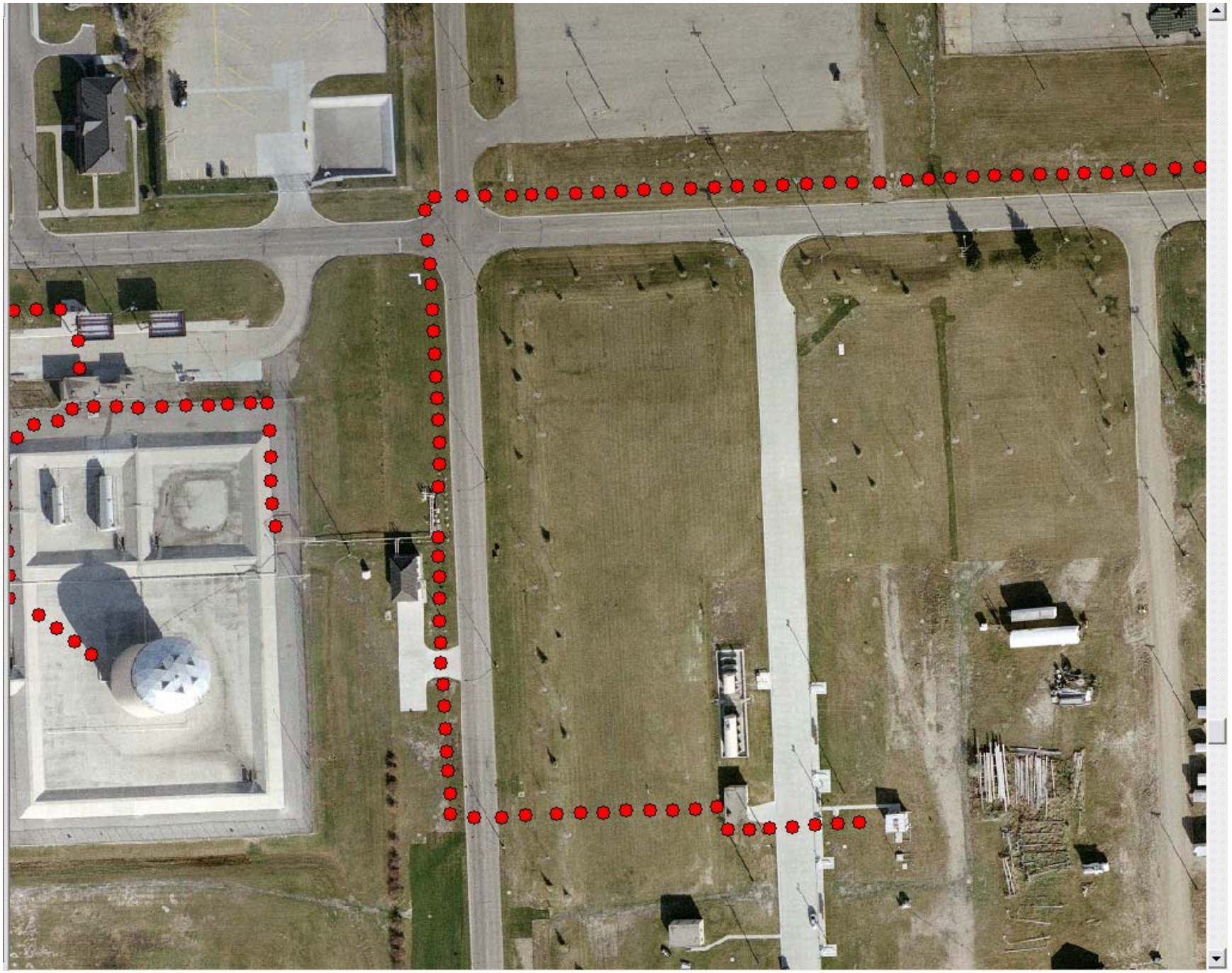
N



Library / ADC (soil monitoring wells of the old gas station Bldg 200)



POL/ 501 (monitoring wells of the old fuel hydrant system)



Flush-mount soil-vapor probe locations around Eielson and 1st Ave.

Flush-mount soil-vapor probe locations around the Vet Clinic.

APPENDIX D
AF FORM 813

REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS

Report Control Symbol
RCS: 2006-110

INSTRUCTIONS: *Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item number(s).*

SECTION I - PROPONENT INFORMATION

1. TO *(Environmental Planning Function)*	2. FROM *(Proponent organization and functional address symbol)*	2a. TELEPHONE NO.
319 CES/CEVA	319 CES/CD	701-747-4761

3. TITLE OF PROPOSED ACTION
Landscape Multiple Areas

4. PURPOSE AND NEED FOR ACTION *(Identify decision to be made and need date)*
Site improvements are necessary to create a unified city-like environment that enhances the quality of life, improves the maintenance, protects natural resources, and enhances overall aesthetics of Grand Forks AFB.

5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES *(DOPAA) (Provide sufficient details for evaluation of the total action.)*
Landscape a number of facilities and areas on base as part of the Grand Forks AFB Green Plan. See attached Green Plan for listing and description of individual landscape projects. Erosion control will shade soil and prevent the drying and loss of topsoil.

6. PROPONENT APPROVAL *(Name and Grade)*	6a. SIGNATURE	6b. DATE
MARY C. GILTNER, GM-13 Deputy Base Civil Engineer	Mary C. Giltner	2-23-06

SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. *(Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U= unknown effect)*	+	0	-	U
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE *(Noise, accident potential, encroachment, etc.)*	☐	☒	☐	☐
8. AIR QUALITY *(Emissions, attainment status, state implementation plan, etc.)*	☐	☒	☐	☐
9. WATER RESOURCES *(Quality, quantity, source, etc.)*	☐	☒	☐	☐
10. SAFETY AND OCCUPATIONAL HEALTH *(Asbestos/radiation/chemical exposure, explosives safety quantity-distance, bird/wildlife aircraft hazard, etc.)*	☐	☒	☐	☐
11. HAZARDOUS MATERIALS/WASTE *(Use/storage/generation, solid waste, etc.)*	☐	☒	☐	☐
12. BIOLOGICAL RESOURCES *(Wetlands/floodplains, threatened or endangered species, etc.)*	☒	☐	☐	☐
13. CULTURAL RESOURCES *(Native American burial sites, archaeological, historical, etc.)*	☐	☒	☐	☐
14. GEOLOGY AND SOILS *(Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)*	☐	☒	☐	☐
15. SOCIOECONOMIC *(Employment/population projections, school and local fiscal impacts, etc.)*	☐	☒	☐	☐
16. OTHER *(Potential impacts not addressed above.)*	☐	☒	☐	☐

SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION

17. ☐ PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # _____ ; OR
☒ PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.

18. REMARKS
This action is not "regionally significant" and does not require a conformity determination in accordance with 40 CFR 93.153(1). The total emission of criteria pollutants from the proposed action are below the de minimus thresholds and less than 10 percent of the Air Quality Region's planning inventory.

19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION *(Name and Grade)*	19a. SIGNATURE	19b. DATE
WAYNE A. KOOP, R.E.M., GS-13 Environmental Management Flight Chief	Wayne A. Koop	22 Feb 06

4.0 Purpose and Need for Action, RCS # 2006-110, Landscape Multiple Areas

4.1 Purpose of the Action (mission objectives-who proposes to do what, where, when): Landscape a number of facilities and areas on base as part of the Grand Forks AFB Green Plan. Green Plan includes JFSD200509 Landscape Steen Blvd, JFSD200336 Landscape/Screen Community Area, JFSD200510 Landscape Holzapple & Tuskegee, JFSD200525 Landscape Holzapple St East Side, JFSD200536 Landscape Honor Guard, JFSD980023 Erosion Control Base Wide, JFSD200410 Landscape Post Office, JFSD200512 Landscape Family Support, JFSD200526 Landscape Child Development Center, JFSD200511 Landscape Library, JFSD200538 Landscape Bowling Center, JFSD200539 Landscape Community Activities Center, JFSD200528 Landscape Tuskegee Airmen Blvd, JFSD200533 Landscape G St, JFSD200530 Landscape Dorm Area East Side, JFSD200529 Landscape 7th Ave, JFSD200447 Landscape Pavilion, JFSD980023P2 Erosion Control Base Wide, JFSD200531 Landscape Eielson St, JFSD200537 Landscape Vet Clinic, JFSD980023P3 Erosion Control Base Wide, JFSD200532 Multi-use Trail Landscape Improvements, JFSD200488 Landscape/Screen RV Lot, JFSD539333 Landscape Multi-use Recreation Area, JFSD200534 Landscape MSS/Finance/Comm, JFSD200513 Landscape Network Control Center, JFSD980023P4 Erosion Control Wase Wide.

4.2 Need for the Action (why this action is desired or required-why here, why now): Erosion control is necessary to prevent the loss of topsoil, and improve the general appearance of the improved areas of the base. Site improvements in the improved areas on base are necessary to create a unified city-like environment that enhances the quality of life. A need exists for a healthy, pest and disease free, thriving, attractive, and professional appearance of exterior landscapes.

4.3 Objectives for the Action (what goal do you wish to accomplish): Integrate all management activities in a way that sustains, promotes, and restores the health and integrity of the environment. Include ecosystem management and biodiversity concerns in the design and planning of project maximizing use of native species. Ensure site grading not only provides drainage for the newly developed area, but does not hinder drainage of adjacent areas.

4.4 Related EISs/EAs and other documents (similar projects in the past): #2004-339 EA/FONSI for INRMP (Integrated Natural Resources Management Plan) includes wetland delineation, tree arboretum and Prairie View Nature Preserve maintenance and native praire restoration, butterfly garden, urban tree inventory, riparian river bank stabilization, shelterbelt rejuvenation, living snow fences, habitat assessment, noxious weed eradication, bird houses and surveys, beaver control; threatened, endangered and sensitive species monitors; hay lease maintenance, burn plan, mosquito control, multipurpose base trail loop, BASH reduction, deer bowhunting, Turtle River fishing and picnicking, golf course cover, public awareness signs and displays, GIS incorporation. Multiple landscape projects of the past have been CATEXed, based on EA # 1999-052 Landscape Dorm Community.

4.5 Decision that must be made: Landscape multiple projects as listed in the Green Plan.

4.6 Applicable Regulatory Requirements and Required Coordination-- required permits, licenses, entitlements: Contractor must submit a Work Clearance Request, Stormwater Protection Plan, Dust Control Plan, Spill Control Plan, Erosion and Sediment Control Plan to the CEV Water Program Manager and Contracting Officer.

5.0 Description of Proposed Action and Alternatives

5.1 Description of the proposed action (in brief, introduction): Plant trees, shrubs and flowers to landscape a multiple of areas described by individual projects within the attached Green Plan.

5.2 Selection criteria for Alternatives

5.2.1 Minimum mission requirements: effectiveness, timeliness, cost effective, legality, safety, efficiency, force protection.

5.2.2 Minimum environmental standards : noise, air, water, safety, HW, vegetation, cultural, geology, soils, socioeconomic.

5.3 Alternatives Considered but Eliminated from Detailed Study: None.

5.4 Description of proposed alternatives

5.4.1 No-action alternative: Soil erosion will continue. Physical features of the base complex will continue to deteriorate and not provide amenities common to similar environments in the civilian community. Morale, productivity, and career satisfaction of the professional force, and respect of retirees and dignitaries visiting Grand Forks AFB will be adversely affected.

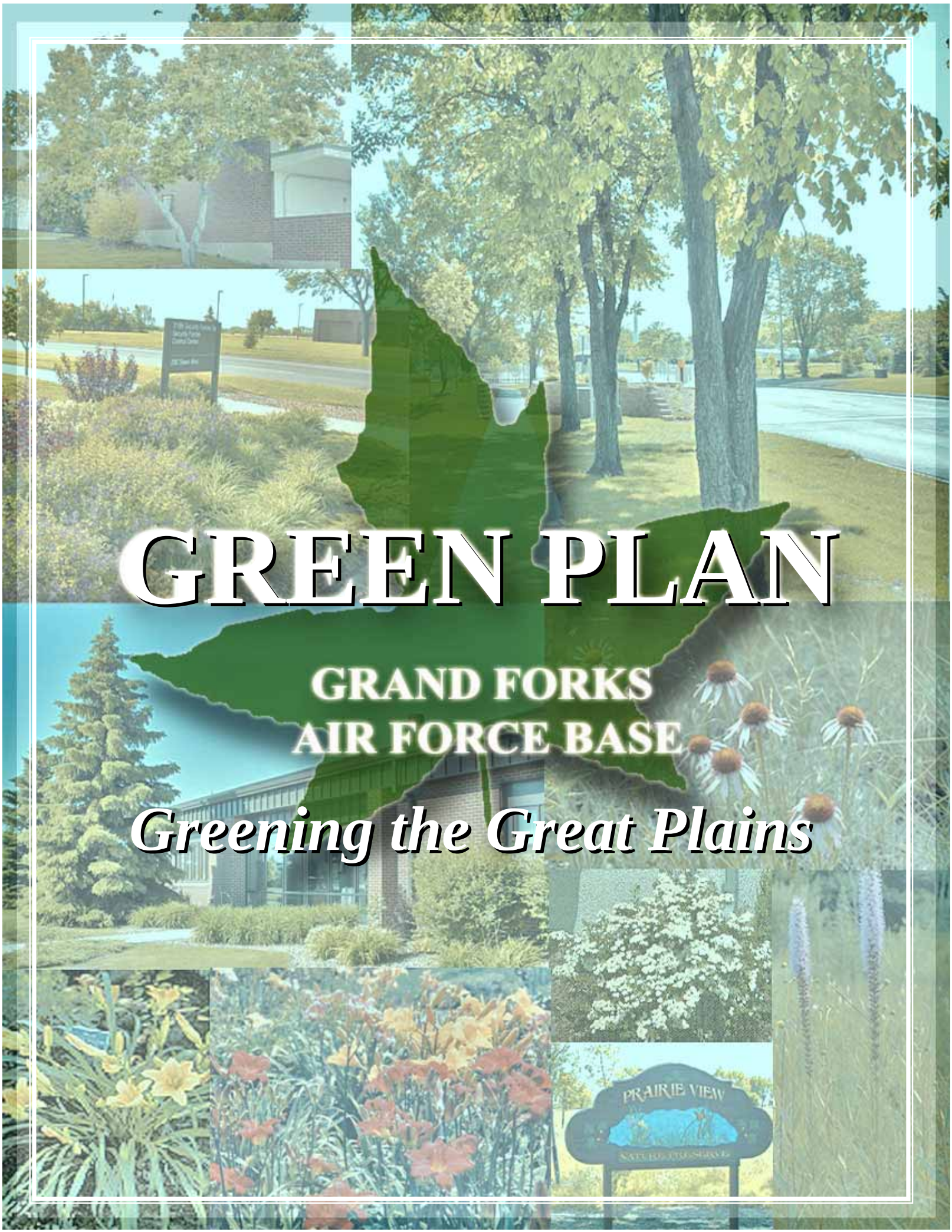
5.4.2 Proposed Action. Plant trees, shrubs, annuals, perennials, and accent plants. Install barrier fabric, edging, inorganic and organic mulch, and all other associated items for a complete landscaping. Install irrigation systems. Landscape design services. Fertilize and add soil amendments. Perform landscape establishment. Perform erosion control by sodding the improved area of the base. Exterior site improvements would include tilling, topsoil, soil additives, fine grading, and installation of sod. Install sod and other turf. Perform site preparation. Landscape grading. Furnish all plants, labor, equipment and related materials by contract. See attached Green Plan for listing and description of individual landscape projects.

5.4.3 Another Reasonable Action Alternative: Plant trees, shrubs, annuals, perennials, and accent plants in-house by CES.

5.5 Description of Past and Reasonably Foreseeable Future Actions Relevant to Cumulative Impacts: There are several other construction and demolition projects occurring on Grand Forks AFB in the same time frame. These projects are addressed under separate NEPA documents.

5.6 Recommendation of preferred alternative: Landscape the proposed areas listed in the Green Plan.

APPENDIX E
"GREEN PLAN"
ARCHITECTURAL COMPATIBILITY GUIDE EXCERPT


GREEN PLAN
GRAND FORKS
AIR FORCE BASE
Greening the Great Plains
PRAIRIE VIEW

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 319TH AIR REFUELING WING (AMC)
GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

MEMORANDUM FOR HQ AMC/A7
507 Symington Drive
Scott AFB IL 62225-5022

24 NOV 2004

FROM: 319 ARW/CC
460 Steen Blvd
Grand Forks AFB ND 58205-6231

SUBJECT: Greening AMC Bases Tasker (email dated 21 Oct 2004)

1. It is my pleasure to present the 2004 Green Plan for Grand Forks Air Force Base. It is our utmost goal to improve the quality of life and increase community spirit and pride by greening our base. This plan is a narrative and pictorial document with illustrations depicting our priority "greening" areas. It strengthens our master space plan by helping define land use areas and polishing the overall appearance and maintenance concerns for our base.

2. All of the projects listed in this plan are designed and ready for execution, many through a new landscape open-end contract which was initiated in 2003. The designs are a collaboration of projects over 5 years in the making that address our base's natural resources, maintenance, landscape architectural compatibility, and overall professional appearance.

3. As responsible stewards of the public trust, we must guide base development according to a plan that maximizes economic, natural, and social resources. Development of this document used an integrated approach uniting resource elements fulfilling these objectives. By maintaining and improving what we have now and ensuring the quality of what we build in the future, we allow the traditions of excellence at Grand Forks Air Force Base to be carried on. *I fully endorse this Green Plan.* Future funding received at GFAFB will enhance our burgeoning oasis on the Northern Great Plains, and move project goals towards completion.

JOEL S. REESE, Colonel, USAF
Commander

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OVERVIEW

This Green Plan is needed to provide a cohesive approach to manage and improve the maintenance, natural resources, and overall aesthetics at Grand Forks Air Force Base. Below are objectives that are followed throughout the entire project lifespan.

•Utilize the installation plant list to create continuity in all new work and facility grounds upgrades.

•Incorporate freeform, naturally flowing lines in all major elements of the landscape such as turf layout, planting used for screens and barriers, and tree planting configurations.

•Incorporate a combination of berms and landscape treatment to all new facilities and parking areas.

•Enhance existing tree rows and windbreaks with freeform design, additional color, and texture combinations.

•Sod shall be used in all new or restored areas of ground cover unless otherwise approved by the Base Civil Engineer.

•Eliminate unplanned planting throughout the installation.

•Develop and maintain highly visible locations such as entries and gates.

•Use xeriscaping (low maintenance, needing low water) practices whenever possible to minimize future maintenance.

•Ensure that plantings are easily maintainable and are coordinated with base maintenance operations.

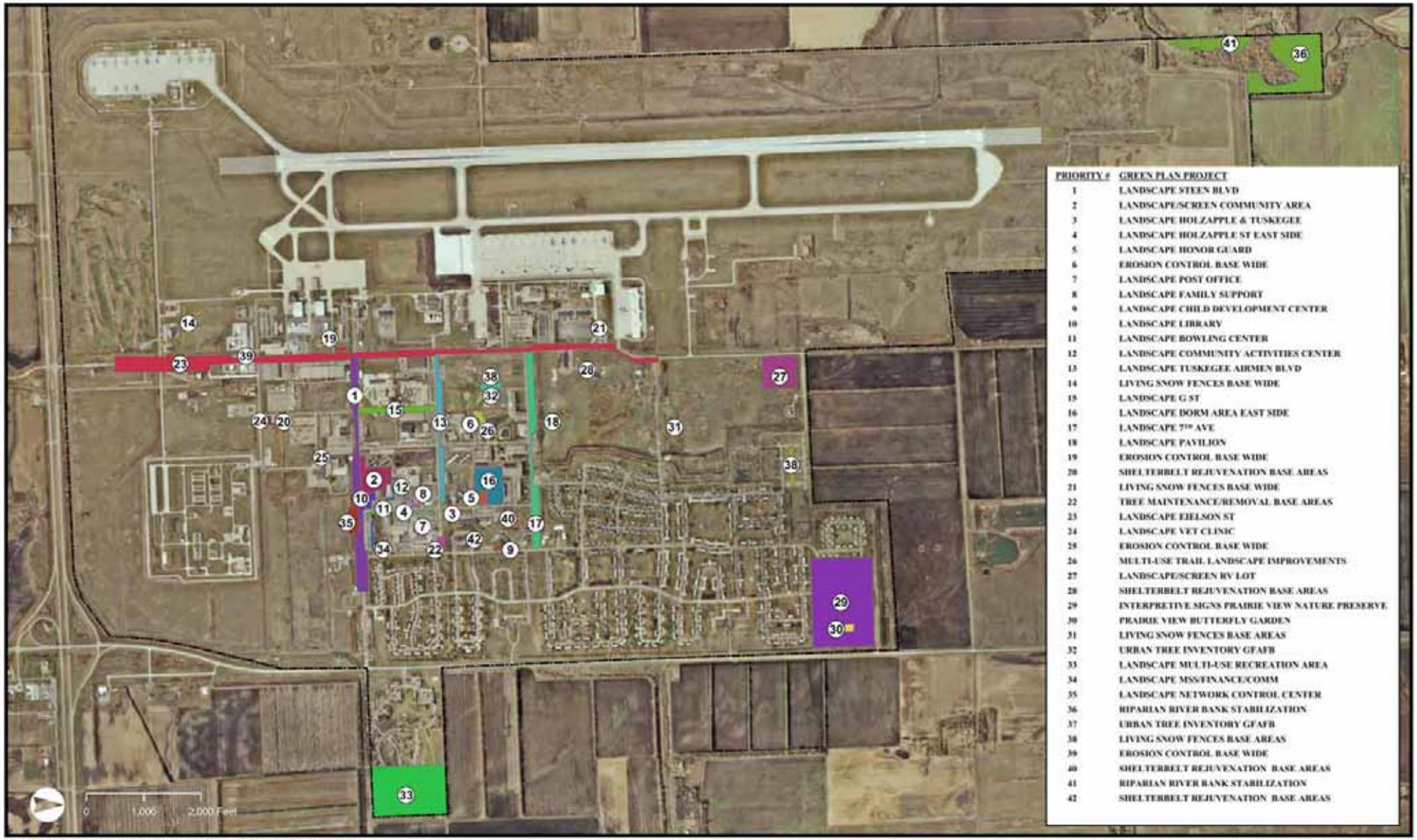
•Ensure site grading not only provides drainage for the newly developed area, but does not hinder drainage of adjacent areas.

•Include ecosystem management and biodiversity concerns in the design and planning of project maximizing use of native species.

•Enhance outdoor recreation and environmental education with “Green Plan” projects.

•Integrate all management activities in a way that sustains, promotes, and restores the health and integrity of the environment.

PROJECT LOCATIONS



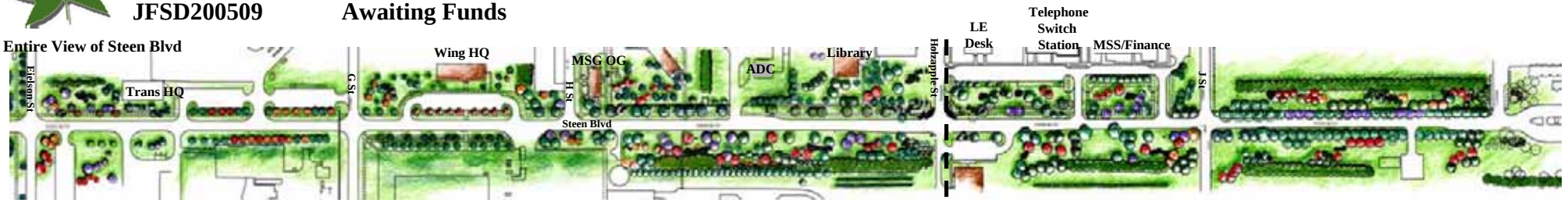
PRIORITY #	GREEN PLAN PROJECT
1	LANDSCAPE STEEN BLVD
2	LANDSCAPE/SCREEN COMMUNITY AREA
3	LANDSCAPE HOLZAPPLE & TUSKEGEE
4	LANDSCAPE HOLZAPPLE ST EAST SIDE
5	LANDSCAPE HONOR GUARD
6	EROSION CONTROL BASE WIDE
7	LANDSCAPE POST OFFICE
8	LANDSCAPE FAMILY SUPPORT
9	LANDSCAPE CHILD DEVELOPMENT CENTER
10	LANDSCAPE LIBRARY
11	LANDSCAPE BOWLING CENTER
12	LANDSCAPE COMMUNITY ACTIVITIES CENTER
13	LANDSCAPE TUSKEGEE AIRMEN BLVD
14	LIVING SNOW FENCES BASE WIDE
15	LANDSCAPE G ST
16	LANDSCAPE DORM AREA EAST SIDE
17	LANDSCAPE 7TH AVE
18	LANDSCAPE PAVILION
19	EROSION CONTROL BASE WIDE
20	SHELTERBELT REJUVENATION BASE AREAS
21	LIVING SNOW FENCES BASE WIDE
22	TREE MAINTENANCE/REMOVAL BASE AREAS
23	LANDSCAPE EIELSON ST
24	LANDSCAPE VET CLINIC
25	EROSION CONTROL BASE WIDE
26	MULTI-USE TRAIL LANDSCAPE IMPROVEMENTS
27	LANDSCAPE/SCREEN RV LOT
28	SHELTERBELT REJUVENATION BASE AREAS
29	INTERPRETIVE SIGNS PRAIRIE VIEW NATURE PRESERVE
30	PRAIRIE VIEW BUTTERFLY GARDEN
31	LIVING SNOW FENCES BASE AREAS
32	URBAN TREE INVENTORY GFAFB
33	LANDSCAPE MULTI-USE RECREATION AREA
34	LANDSCAPE MSS/FINANCE/COMM
35	LANDSCAPE NETWORK CONTROL CENTER
36	RIPARIAN RIVER BANK STABILIZATION
37	URBAN TREE INVENTORY GFAFB
38	LIVING SNOW FENCES BASE AREAS
39	EROSION CONTROL BASE WIDE
40	SHELTERBELT REJUVENATION BASE AREAS
41	RIPARIAN RIVER BANK STABILIZATION
42	SHELTERBELT REJUVENATION BASE AREAS

GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

Landscape Steen Blvd

JFSD200509 Awaiting Funds

Entire View of Steen Blvd

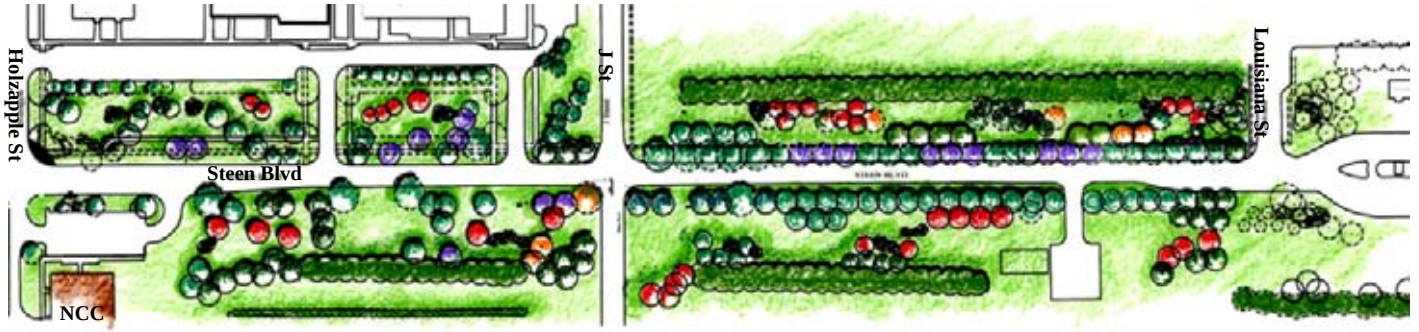


Enlarged portion of Steen Blvd West Portion

PROJECT DESCRIPTION

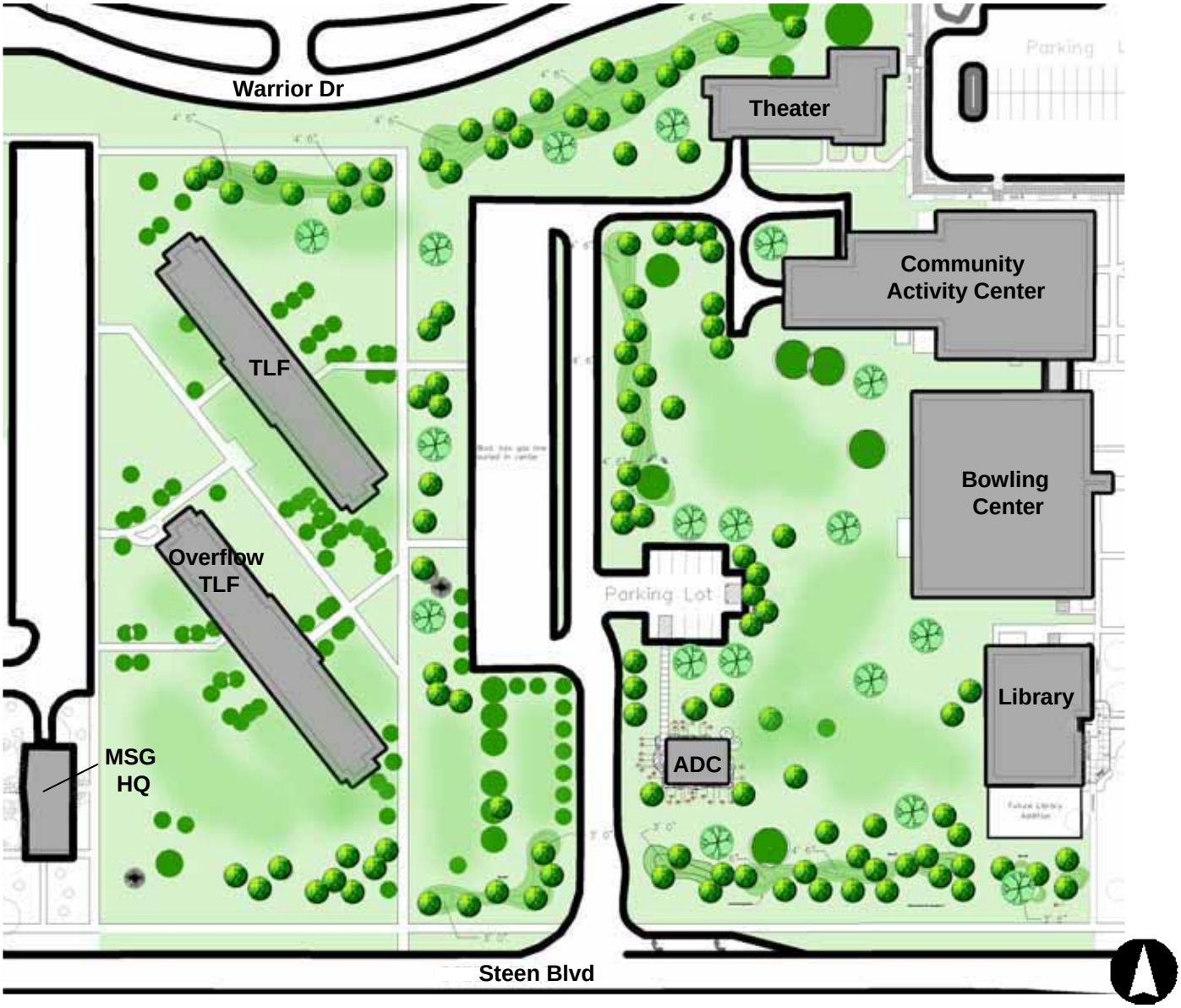
Steen Blvd, the main corridor of the base, lacks continuity and a professional appearance from the minimal sporadic trees that dot this area. Shown above, a master design was created in a 1999 for this entire area. The greening of this main thoroughfare would greatly enhance the overall appearance of the base.

Enlarged portion of Steen Blvd West Portion



Landscape/Screen Community Area

JFSD200336 **Awaiting Funds**

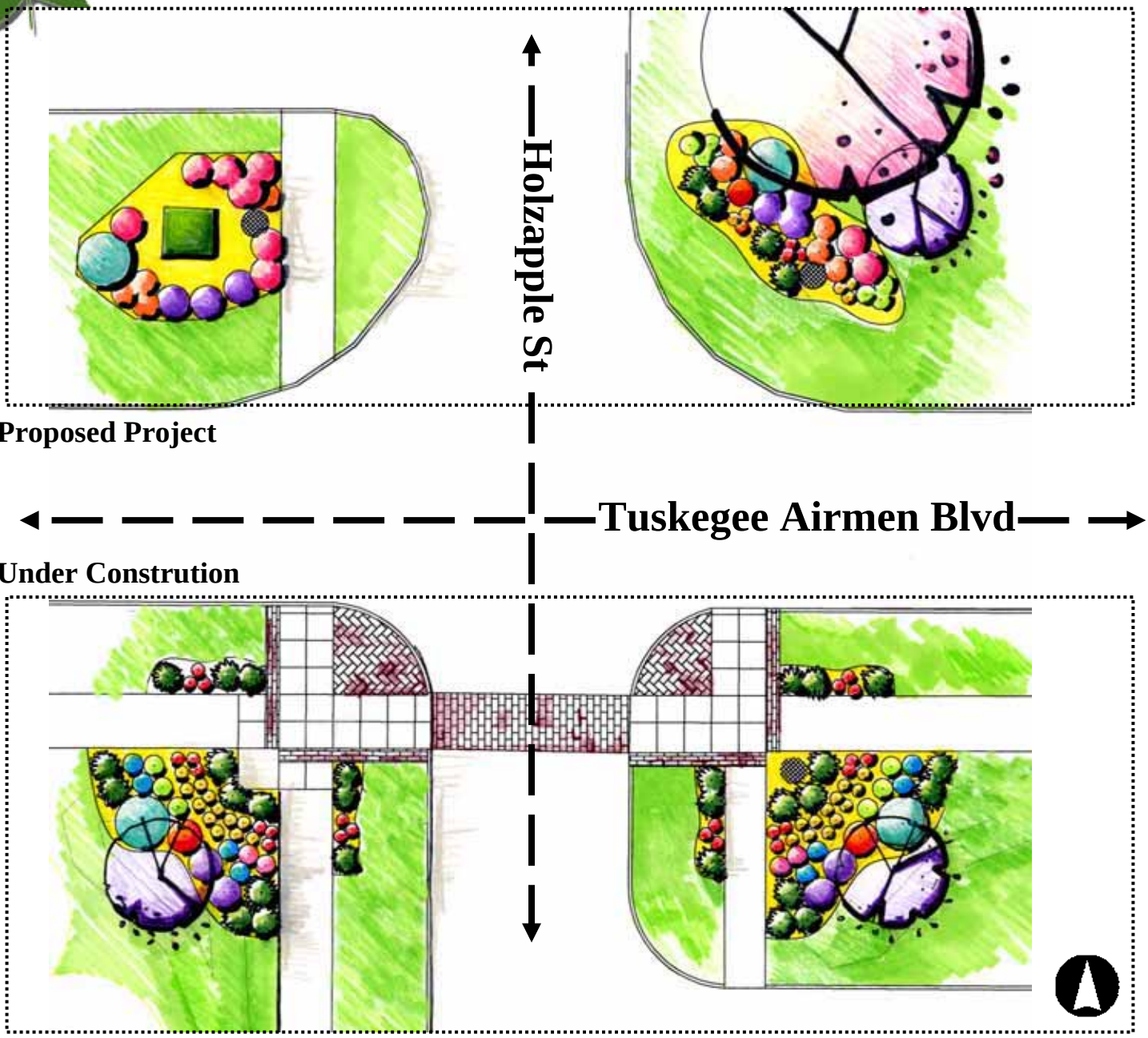


PROJECT DESCRIPTION

This project has been designed to screen the backs of buildings in the community area by planting trees, shrubs, and berms. Currently, the backs of the facilities and their associated service areas are highly visible from Steen Blvd and the newly constructed Warrior Drive. Also, these areas are directly adjacent to our Temporary Lodging Facility and Area Defense Council. This project screens these areas and blends them in with the rest of the downtown atmosphere of our community area.

Landscape Holzapple & Tuskegee

JFSD200510 **Awaiting Funds**



PROJECT DESCRIPTION

The corner of Holzapple St and Tuskegee Airmen Blvd is one of the most important intersections on the base. This entrance onto Holzapple St brings all pedestrian and vehicular traffic into the community area. The southern portions were funded in FY04 and are currently under construction. Funding the northern portions will complete the beautification project around this important intersection.

Landscape Holzapple St – East Side

JFSD200525 **Awaiting Funds**

PROJECT DESCRIPTION

Holzapple St is the center of our downtown area. The west side of Holzapple St is currently under construction with a companion project to our new commissary. The east side of Holzapple St runs along the BX, Dental Clinic, and Post Office. With the completion of this landscape project, the east side of the street will conform to the rest of the Holzapple landscape. Stamped Concrete walkways cross this area also making the entire downtown area very pedestrian friendly.

Landscape Honor Guard

JFSD200536 **Awaiting Funds**

PROJECT DESCRIPTION

The Honor Guard facility, located in a converted indoor pool facility is in need of major landscaping. It is located on Holzapple St with the new TLF to the south and the Warrior Inn to the east, making it highly visible to the adjacent facilities. The facility currently does not have any landscaping making it substandard to the base landscape architectural standards. New landscaping would tie this facility in with the adjacent professional looking facilities.

Erosion Control Basewide

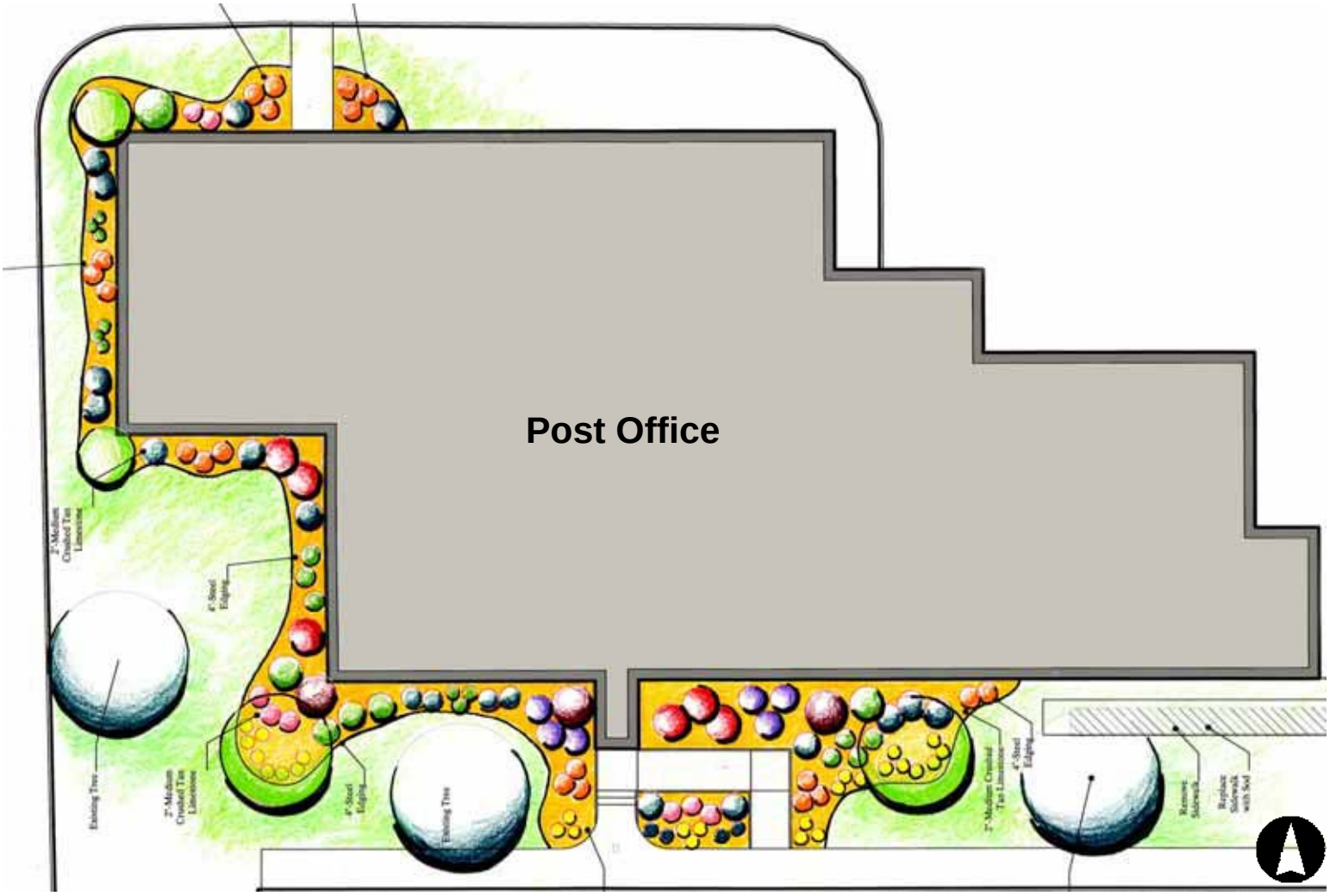
JFSD980023
JFSD980023P2
JFSD980023P3
JFSD980023P4

PROJECT DESCRIPTION

These projects fix areas on base that are in need of new grading, topsoil, and sod. Because of the base's highly alkaline soils, there are many areas on base where there is exposed subsurface, making the areas highly susceptible to erosion. The Grand Forks area is in the middle of a large wet cycle making the current water table very high. With nowhere for the existing runoff to go, preventative measures are needed to prevent erosion from happening.

Landscape Post Office

JFSD200410 Awaiting Funds

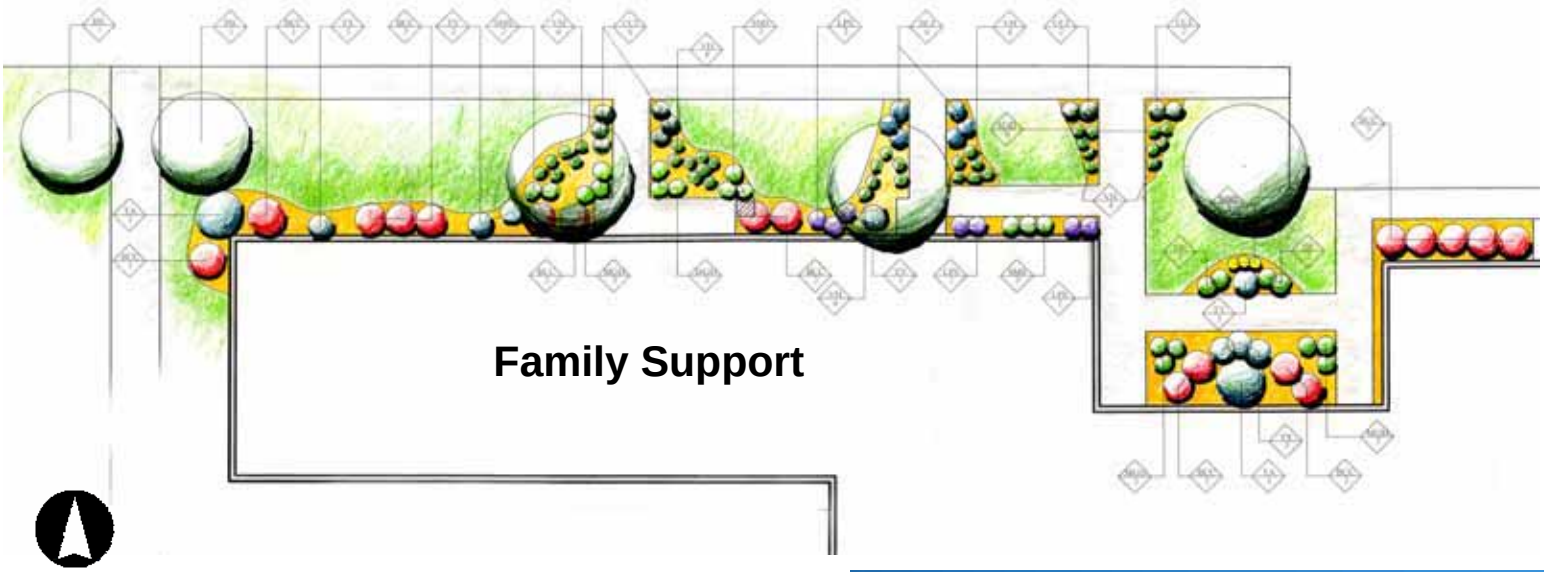


PROJECT DESCRIPTION

The Base Post Office which is located in the community area currently does not meet base landscape architectural standards. Degraded edging exists and the minimal plants that are present on the site are overgrown and in poor condition. The new proposed landscaping has low maintenance perennials and shrubs with long bloom times and great fall color. The new ornamental trees will also frame the post office to give it a professional appearance.

Landscape Family Support

JFSD200512 Awaiting Funds



PROJECT DESCRIPTION

The Family Support center currently has minimal landscaping even though it is one of the main focal points of our community area. A project is currently under construction to replace its deteriorated roof. Landscaping would also add significant curb appeal to the facility while also blending it into the rest of the community area.

Landscape Child Development Center

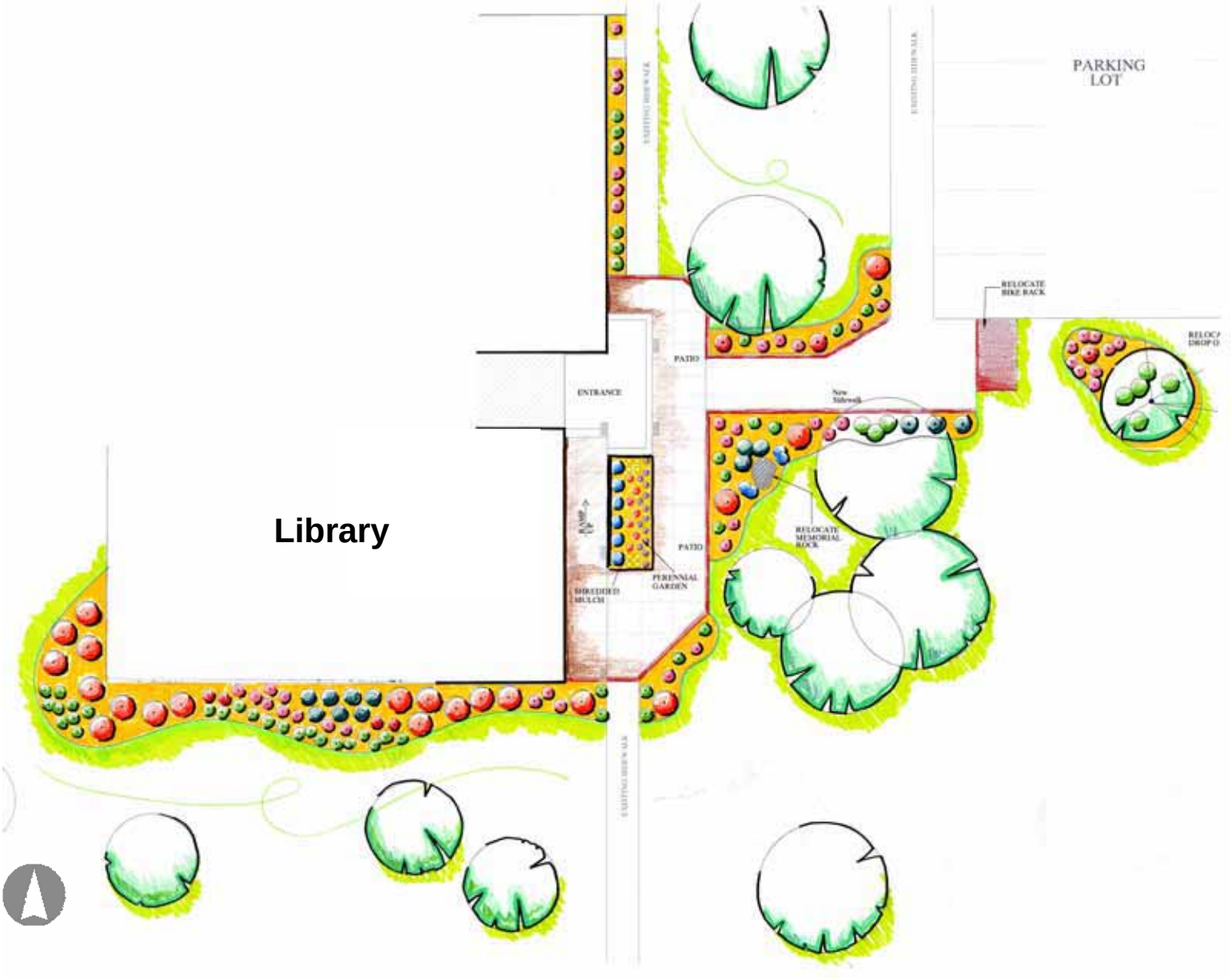
JFSD200526 Awaiting Funds

PROJECT DESCRIPTION

This project adds landscaping to our child development center. The landscape design works seamlessly with existing architectural features at the building's drop off area. Currently no landscaping exists in this area.

Landscape Library

JFSD200511 Awaiting Funds



PROJECT DESCRIPTION

This project creates a new landscaping for our library. This facility is very visible as it is located on the corner of Steen Blvd and Holzapple St. Included in the design would be low maintenance trees, shrubs, perennials, and native ornamental grasses. The library currently has very minimal landscaping which is not to base standards.

Landscape Bowling Center

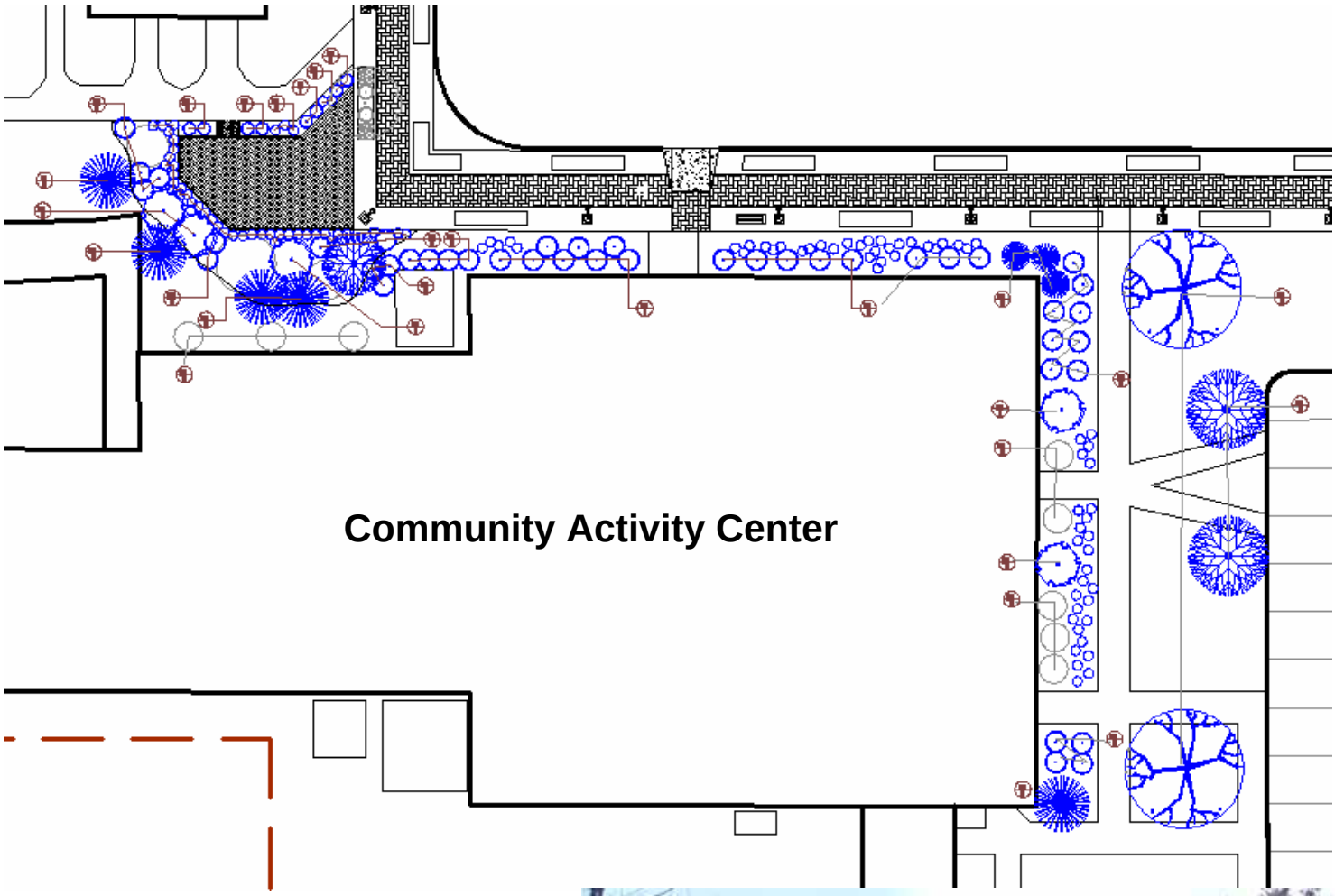
JFSD200538 Awaiting Funds

PROJECT DESCRIPTION

The Bowling Center lacks the curb appeal needed for such a high use facility. Currently, utilities around the facility are exposed and unsightly. This project installs trees, shrubs, and perennials around the facility to bring it up to base standards.

Landscape Community Activities Center

JFSD200539 **Awaiting Funds**

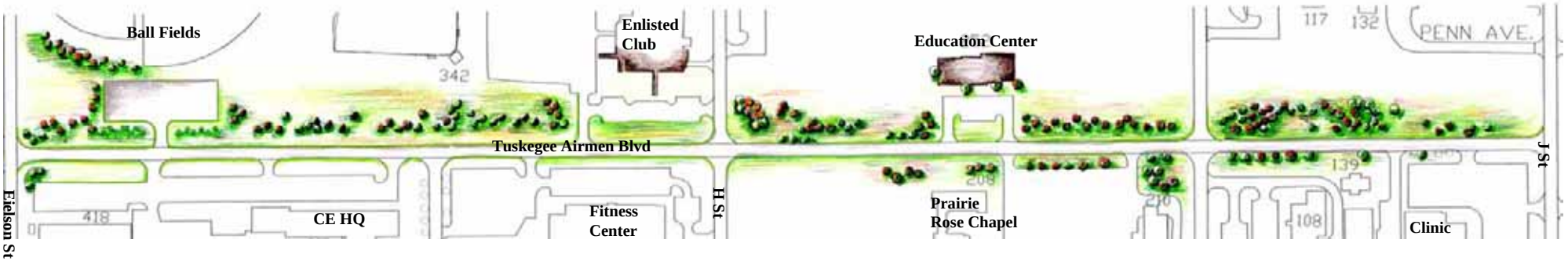


PROJECT DESCRIPTION

The Community Activity Center is in need of new landscaping. This facility is composed of Fast Eddy's Coffee Shop, Skills Development, and other misc. recreational activities and community shops. This project would add trees, shrubs, and perennials to help soften and add curb appeal to this high traffic facility.

Landscape Tuskegee Airmen Blvd.

JFSD200528 **Awaiting Funds**

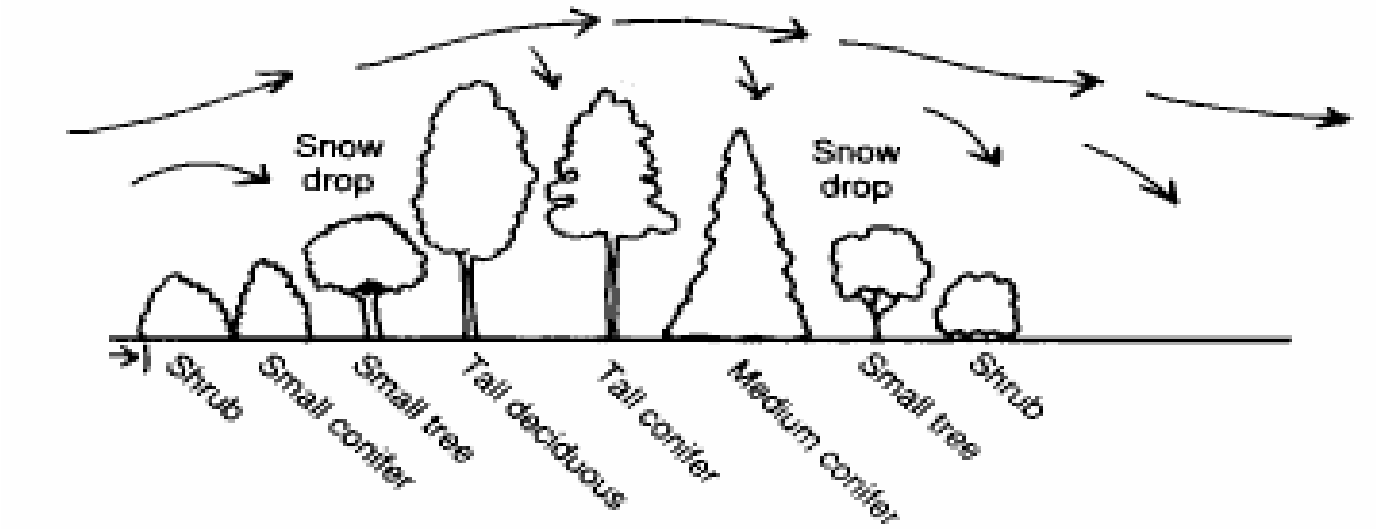


PROJECT DESCRIPTION

This project adds landscaping along Tuskegee Airmen Blvd, a heavily used street through the community area. Large shade trees with a variety of color and texture would be planted along this street, beautifying the entire area.

Living Snow Fences Base Areas

JFSD532111 Base Programmed

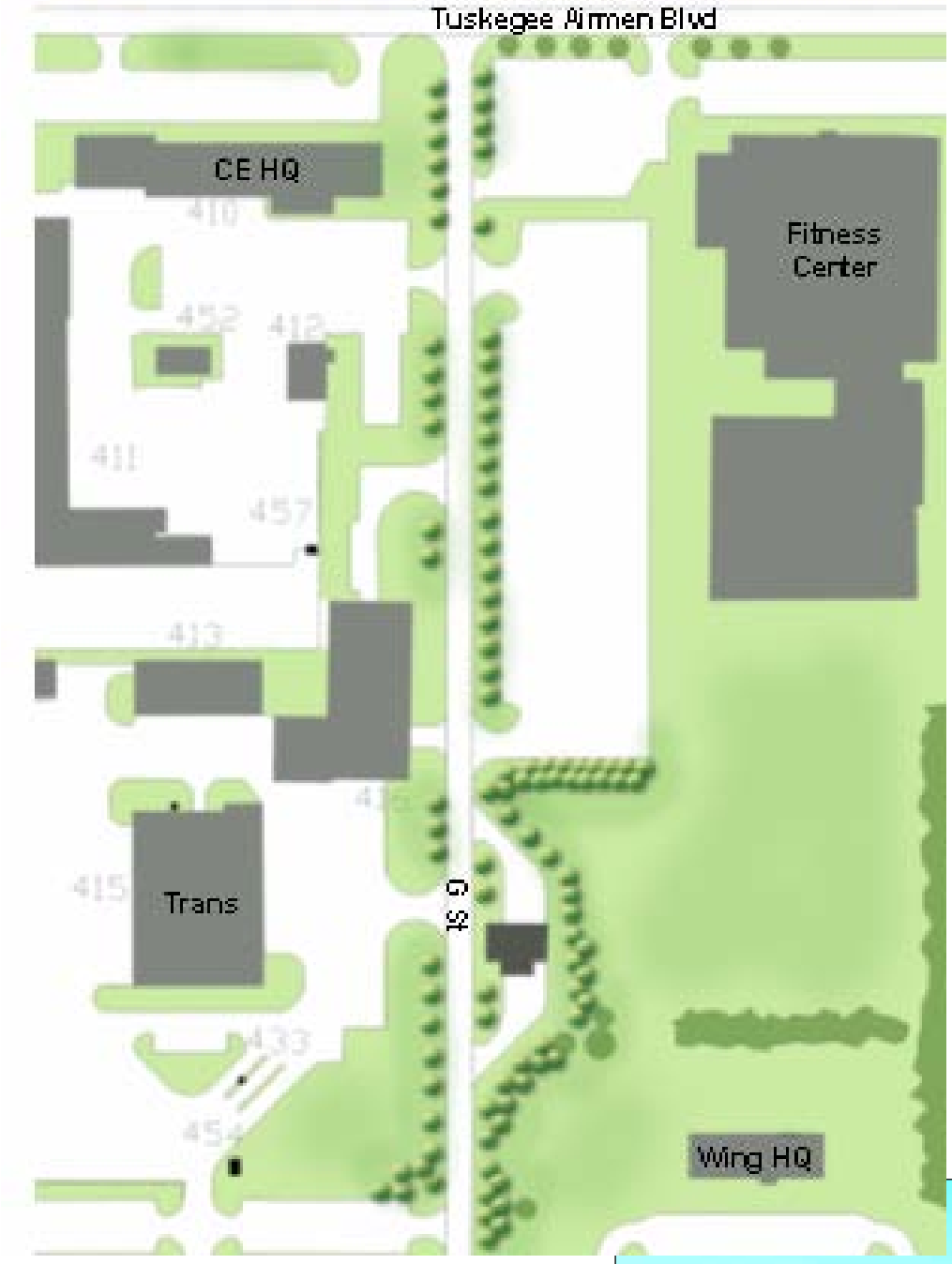


PROJECT DESCRIPTION

GFAFB receives significant snowfalls every year, and to protect bases resources from damaging snowfalls maintenance installs several man-made snow fences. Installation of living snow fences would reduce maintenance costs, provide wind protection and improve energy conservation, assist in dust control and noise abatement, reduce erosion, and provide wildlife habitat. GFAFB installs over a mile of snow fence each year.

Landscape G St

JFSD200533 Awaiting Funds



PROJECT DESCRIPTION

Three land use areas meet at G St which makes it important that there is a natural buffer to help separate these areas. Deciduous street trees are proposed with evergreen screening throughout. This area currently has very minimal landscaping as one can see from the photo to the right.

Landscape Dorm Area East Side

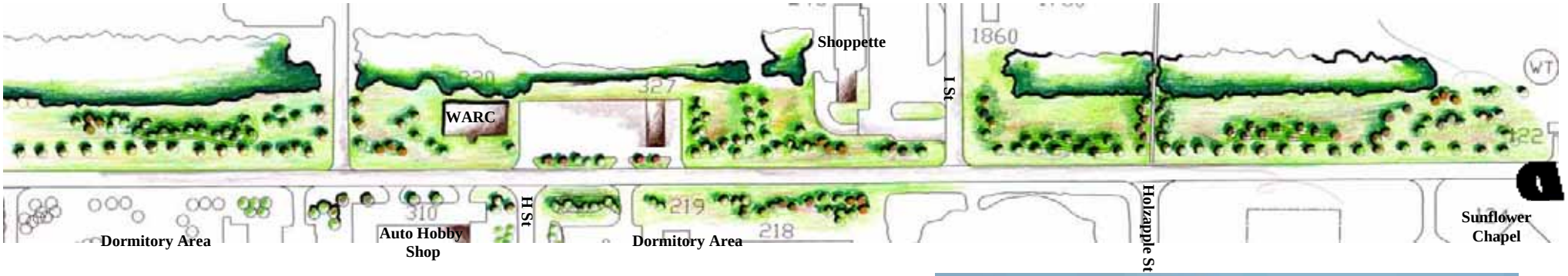
JFSD200530 Awaiting Funds

PROJECT DESCRIPTION

This project is the last of three phases that will add landscaping to the dormitory area. Landscaping is minimal in this area and it currently lacks the flora that the rest of the dormitory area is known for having. This project would tie this area in with the rest of the dormitory campus giving the entire area a polished and finished look.

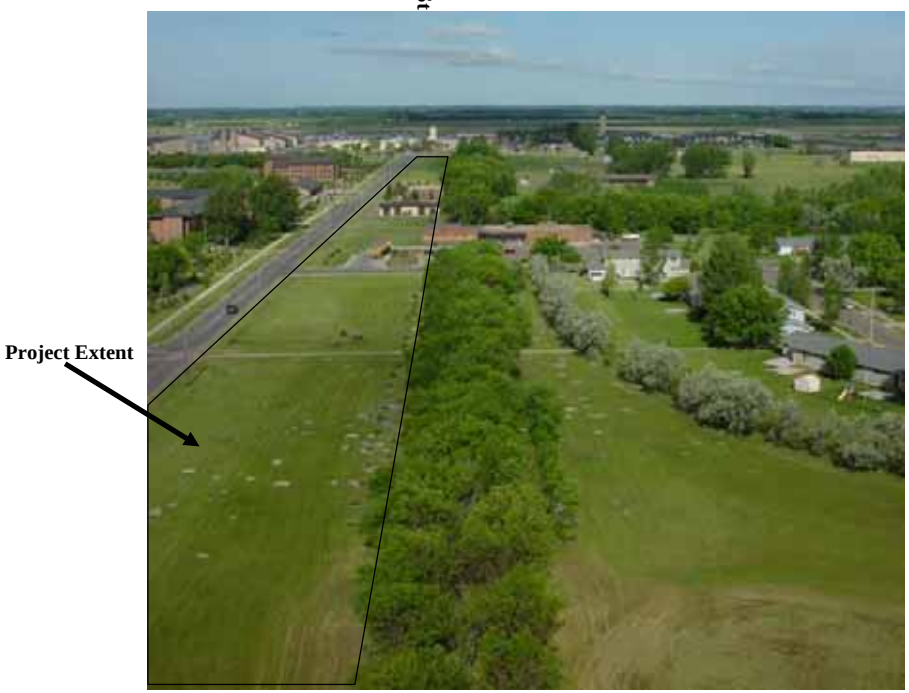
Landscape 7th Avenue

JFSD200529 Awaiting Funds



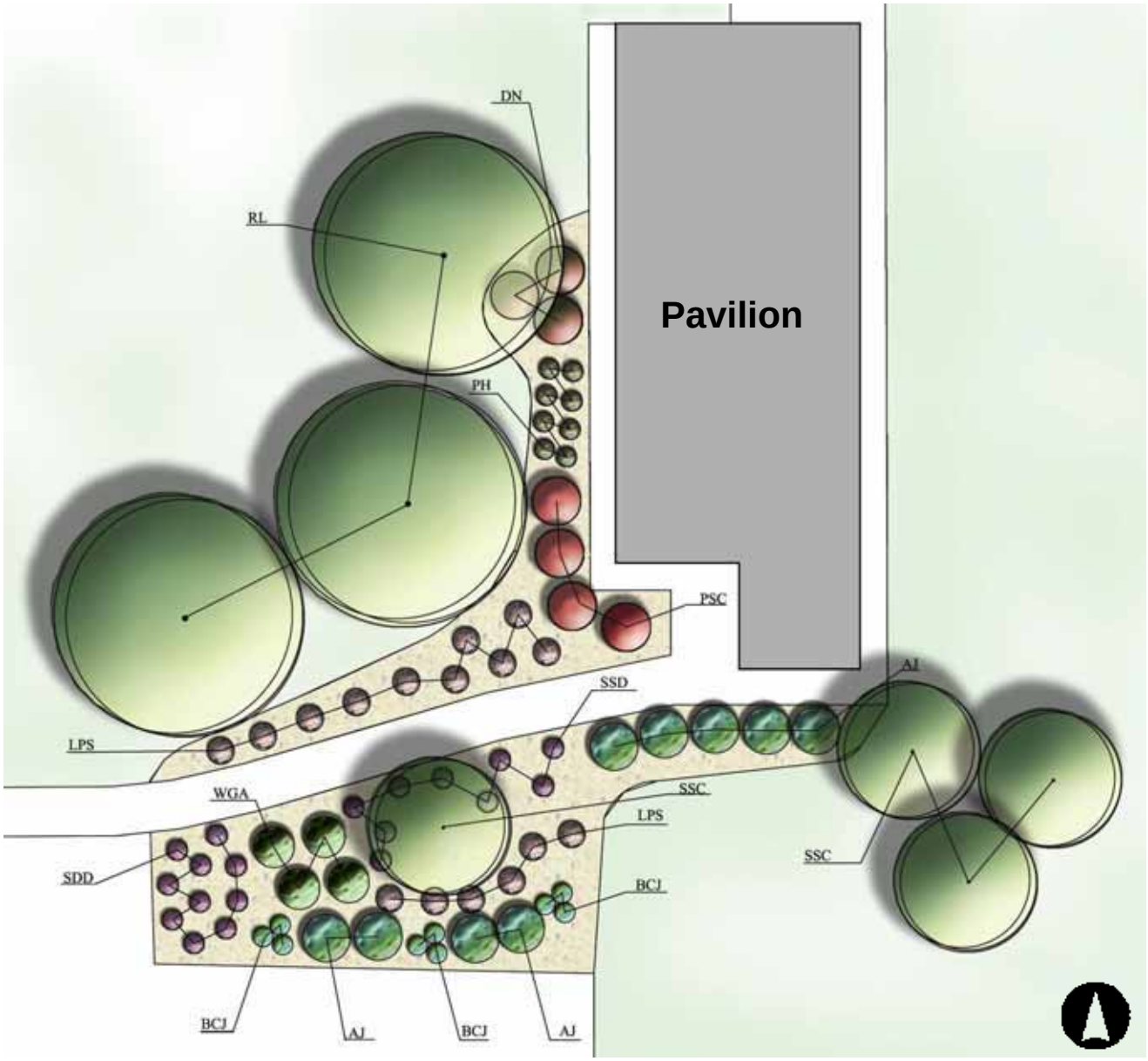
PROJECT DESCRIPTION

This project adds landscaping along7th Avenue, which borders our dormitory community area. Large shade trees with a variety of color and texture would be planted along this street, beautifying the entire area.



Landscape Pavilion

JFSD200447 Awaiting Funds



PROJECT DESCRIPTION

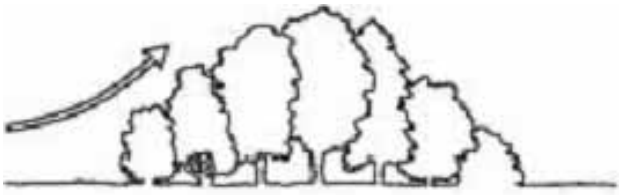
The base's most heavily used pavilion does not have any associated landscaping. New landscaping will help the pavilion blend into the existing landscape while also giving it a nice, park like touch.

Shelterbelt Rejuvenation Base Areas

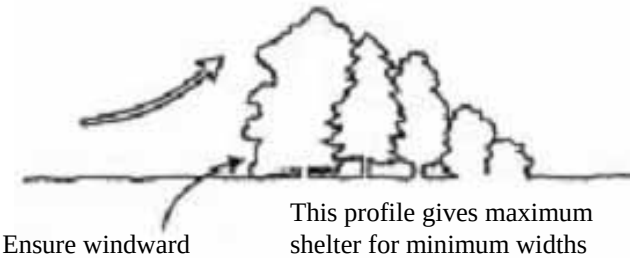
JFSD539267, JFSD539267P2, JFSD539267P3, JFSD539267P4

Example of Existing Shelterbelt that Needs Repair

New Shelterbelt Needed



A-Shaped Profile



This profile gives maximum shelter for minimum widths

Ensure windward Edge does not open up
If necessary plant understory shrubs

PROJECT DESCRIPTION

Repair of aging shelterbelts and installment of new shelterbelts are needed on GFAFB. Many of the existing shelterbelt plantings were put in 30 - 0 years ago and are in need of maintenance. The base has created a multi- use trail system that also requires new plantings. Shelterbelts in the northern plains protect against high winds providing essential wildlife habitat, dust control, noise abatement, and aesthetics. These landscape features can improve energy conservation, provide buffer strips between land uses, trap sediment and reduce runoff, and store carbon. The out- of-sync carbon cycle is considered highly important in combating the effects of global warming, and storing carbon by planting conservation strips can contribute to it's restoration.

Tree Maintenance/Removal Base Areas

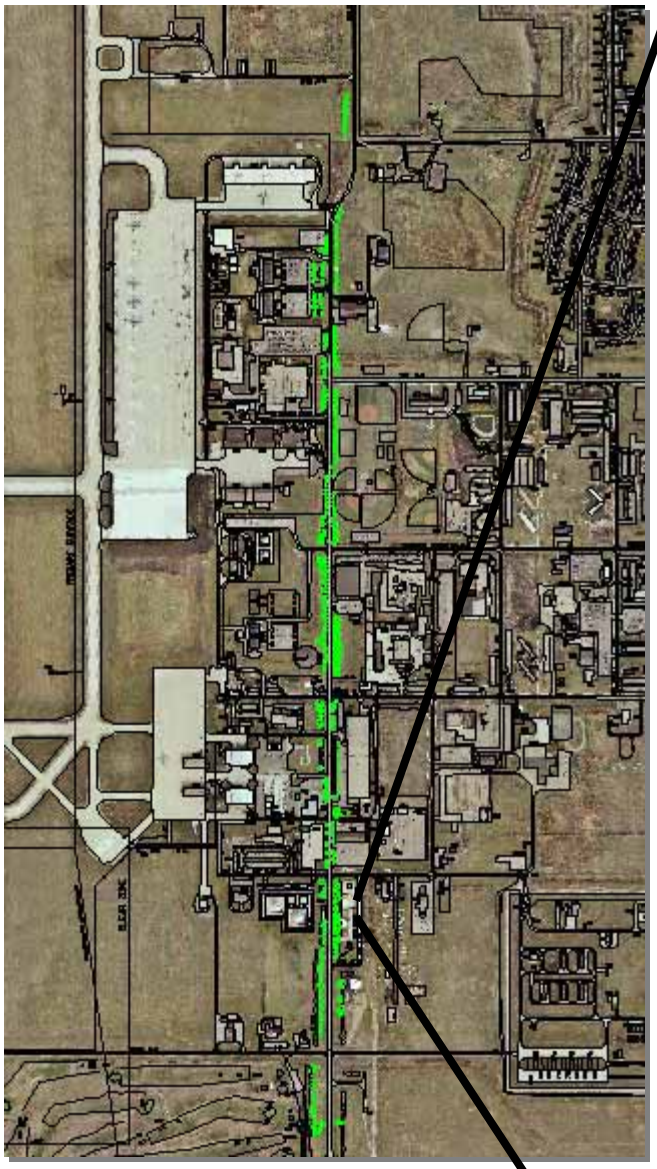
JFSD200535 Awaiting Funds

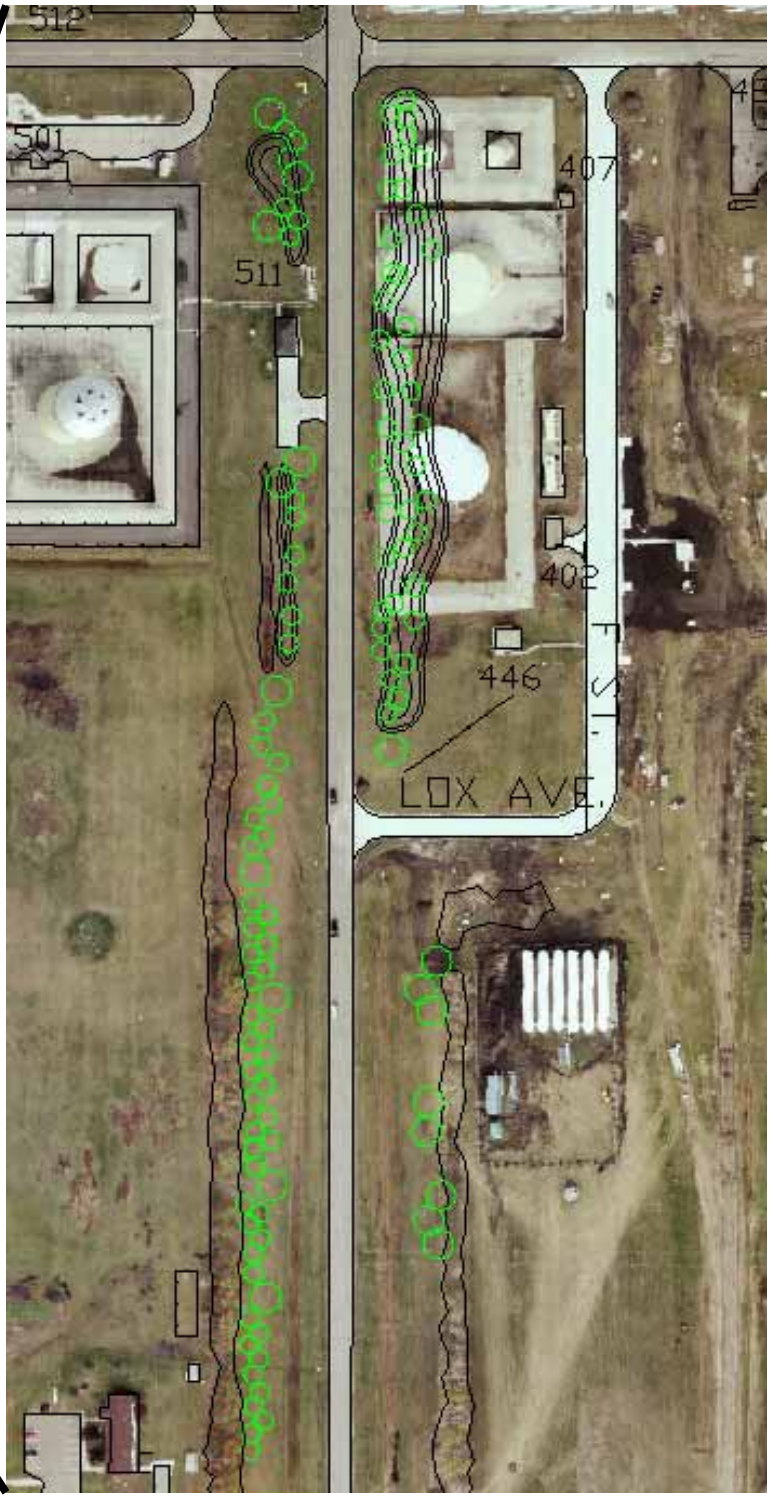
PROJECT DESCRIPTION

Several poplar trees that are in need of removal are present base wide. This project would remove such trees that are not only unsightly, but also pose future maintenance problems.

Landscape Eielson St

JFSD200531 Awaiting Funds





PROJECT DESCRIPTION

This project adds landscaping along Eielson St, one of the base's main corridors. This street divides the flightline and industrial areas from the rest of the base. Large shade trees with a variety of color and texture would be planted along Eielson St., beautifying the entire area while also screening industrial areas.

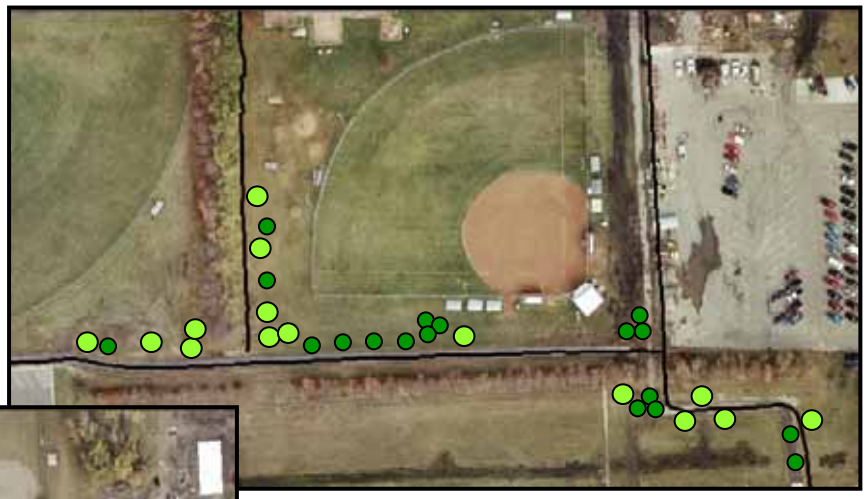
Landscape Vet Clinic

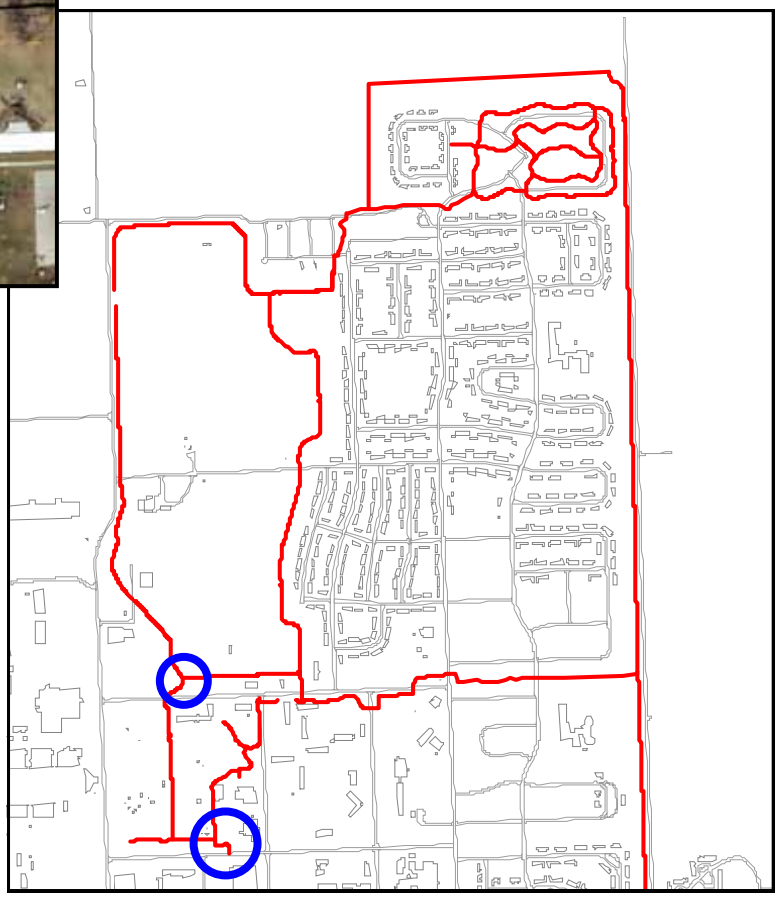
JFSD200537 Awaiting Funds

PROJECT DESCRIPTION

The vet clinic currently does not have any landscaping. This project would install trees, shrubs, and perennials around its vicinity to bring it up to base standards.

MULTI-USE TRAIL LANDSCAPE IMPROVEMENTS





PROJECT DESCRIPTION

New additions to the multi- use trail have been constructed in non- landscaped areas to connect the pathway. Landscaping improvements are required in these new areas, and at intersections to soften the hardscape, and add interest to the trail. Vegetation planted will add to trail user's enjoyment.

Landscape/Screen RV Lot

JFSD200488 Awaiting Funds

PROJECT DESCRIPTION

This project creates a natural screen surrounding the recreational vehicle lot. This would also give shelter to the vehicles in the existing lot, thus cutting down maintenance costs. Currently, the base multi-use trail also runs next to it and a tree screen would serve as a great buffer between these two entities.

Interpretive Signs Prairie View Nature Preserve

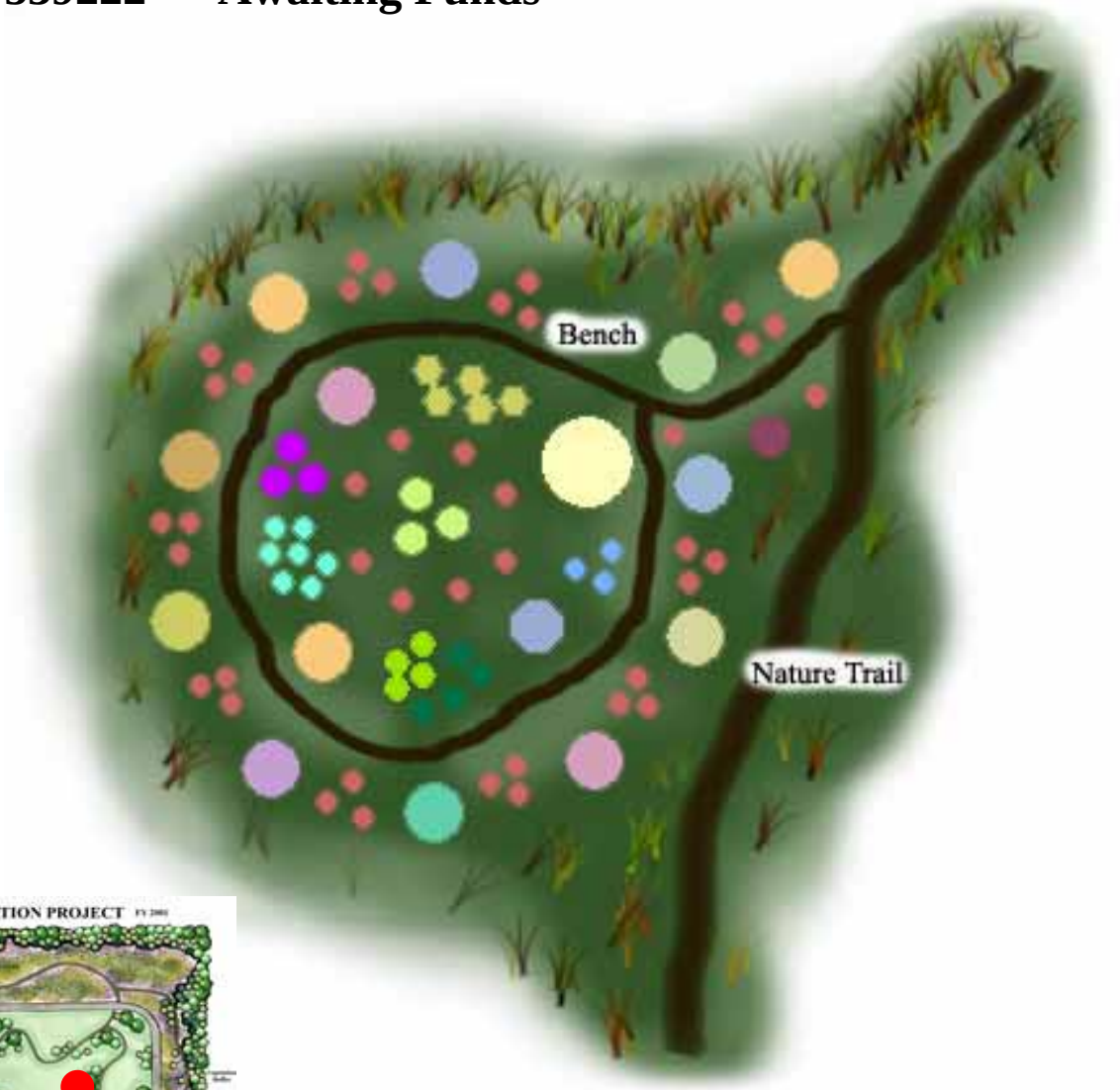
JFSD581305 Awaiting Funds

PROJECT DESCRIPTION

GFAFB restored nearly 40 acres of prairie in 1998, and built aggregate trails that meander through the site. Today the site is in need of interpretive signs describing the flora and fauna that thrive there. Signs will educate the base residents on grassland ecology and conservation, the role of prescribed burning, and describe short, mixed grass, and tall-grass prairie ecosystems.

Prairie View Butterfly Garden

JFSD539222 Awaiting Funds

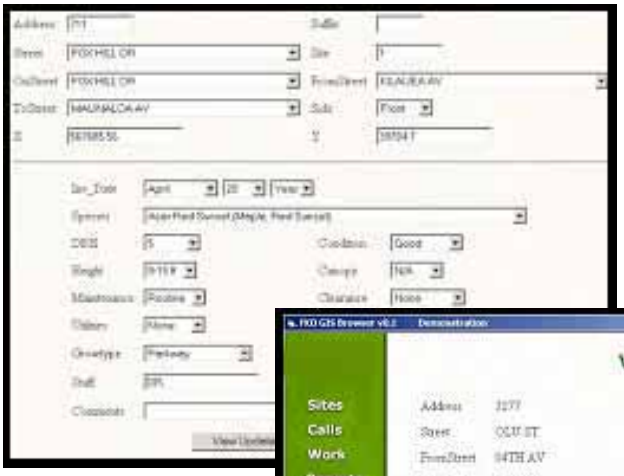


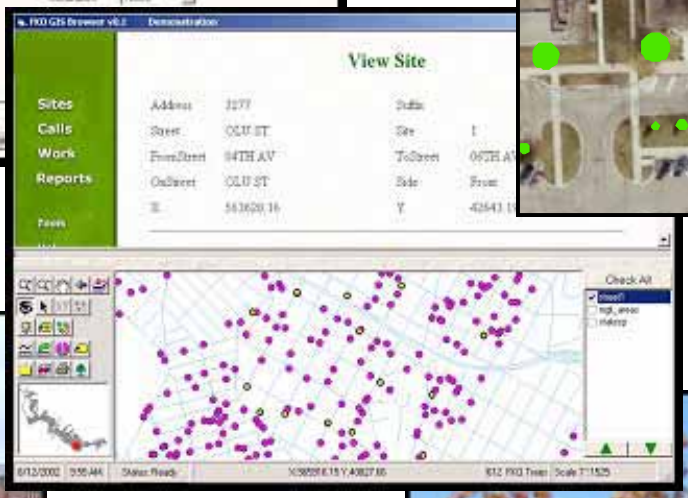
PROJECT DESCRIPTION

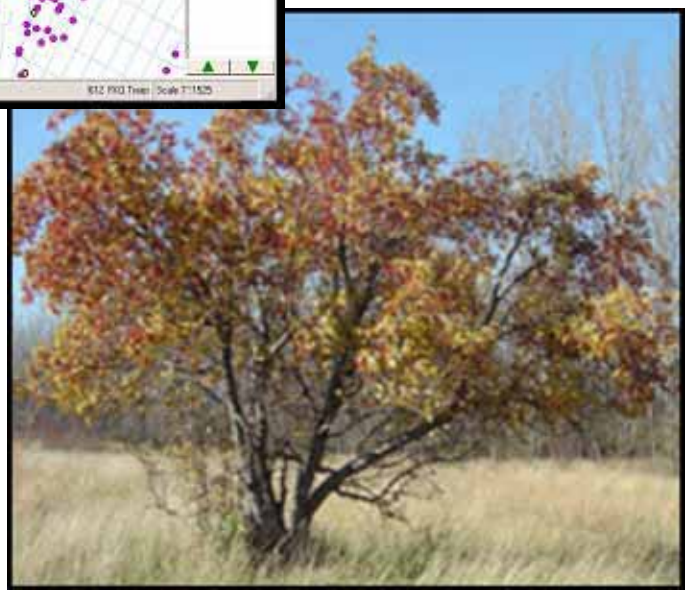
This project, located within the Prairie View Nature Preserve, will create a butterfly garden for both feeding adults and the larval stages of metamorphosis. This garden creation will provide habitat to many grassland butterfly species, and enhance the established Prairie View Nature Preserve located on base. Much public interest has provoked efforts of conservation at the preserve, and it provides an educational forum for both adults and children. It also serves to improve base appearance, and the native mixture of plants used will reduce grounds maintenance costs.

Urban Tree Inventory Grand Forks AFB

JFSD536677, JFSD536677A6 Base Programmed





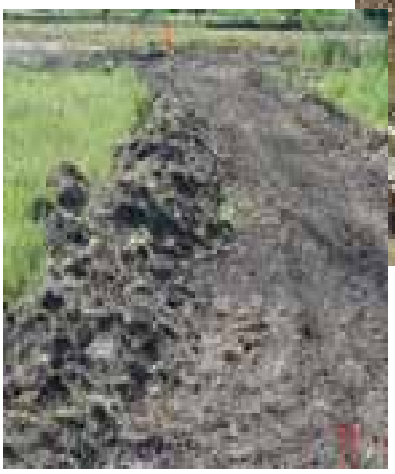


PROJECT DESCRIPTION

Urban forest management requires baseline information regarding species information, tree health, size, maintenance needs, and placement of tree resources. A GeoBase compatible tree inventory is necessary to better manage new plantings, removals, and maintenance. Inclusion in the inventory project is an analysis of installation shelterbelt placement, longevity, and health. Shelterbelts are a vital part of the northern plains landscape as they provide wind protection, serve as living snow fences, reduce air pollution, improve energy conservation, and provide wildlife habitat. Multiple uses are provided by the urban forest, and a planning tool such as an inventory will facilitate ecosystem management and the biological integrity of the resource while reducing costs and eliminate overspending.

Landscape Multi-Use Recreation Area

JFSD539333 Base Programmed

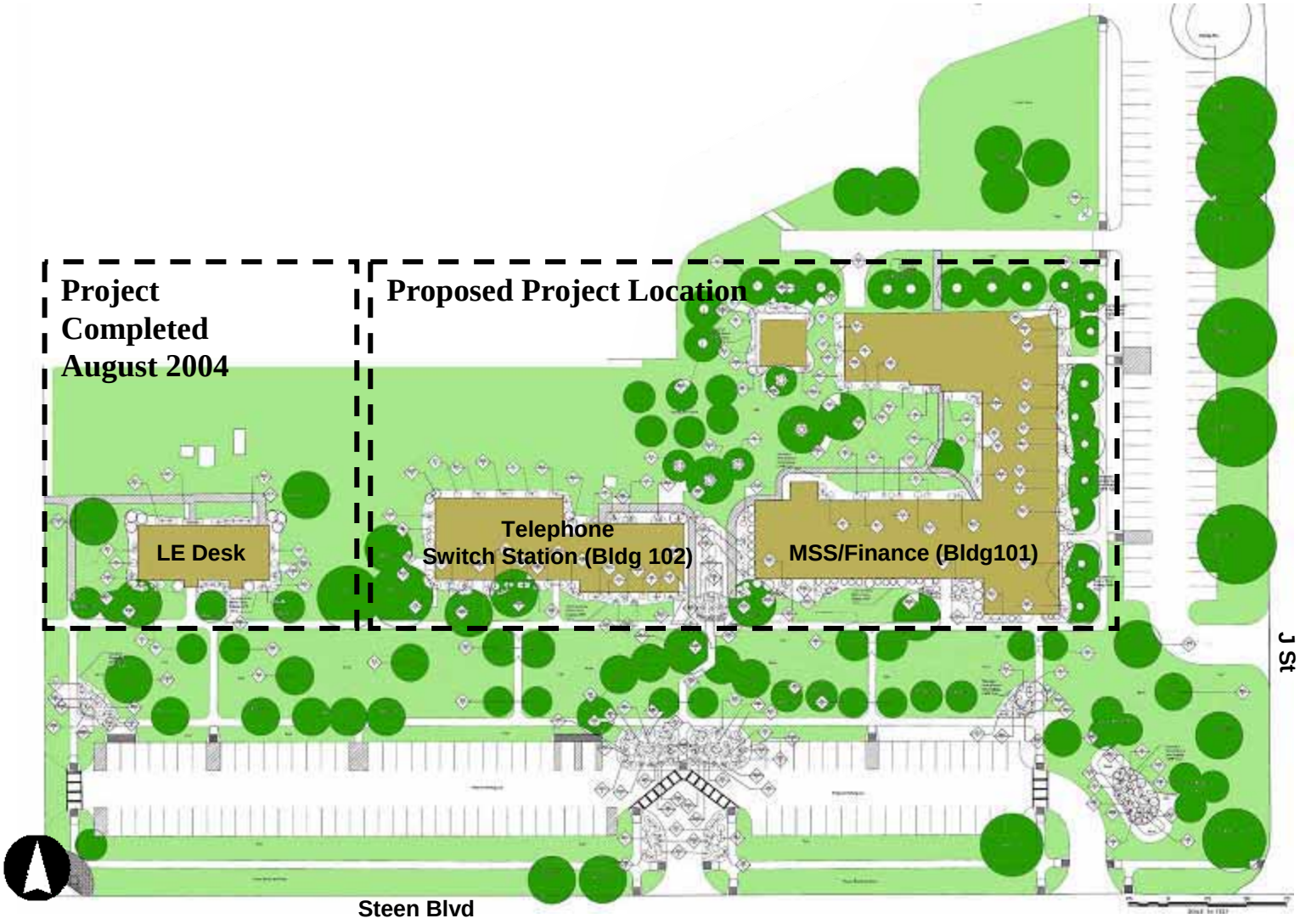


PROJECT DESCRIPTION

GFAFB is building an Off Road Vehicle (ORV) training and recreational area as well as a paintball facility. ORV use can cause considerable damage to natural resources, and monitoring for these environmental effects is required by EO 11644. Preventative measures should be taken to reduce the magnitude and possibility of environmental degradation. Stabilization of the soils by native plantings is needed to abate noise and dust pollution generated from these recreational platforms. Mass tree and shrubbery plantings will provide needed wildlife habitat, improve aesthetics, and add to the enjoyment of the ORV riders and paintball players.

Landscape MSS/Finance/Comm

JFSD200534 Awaiting Funds

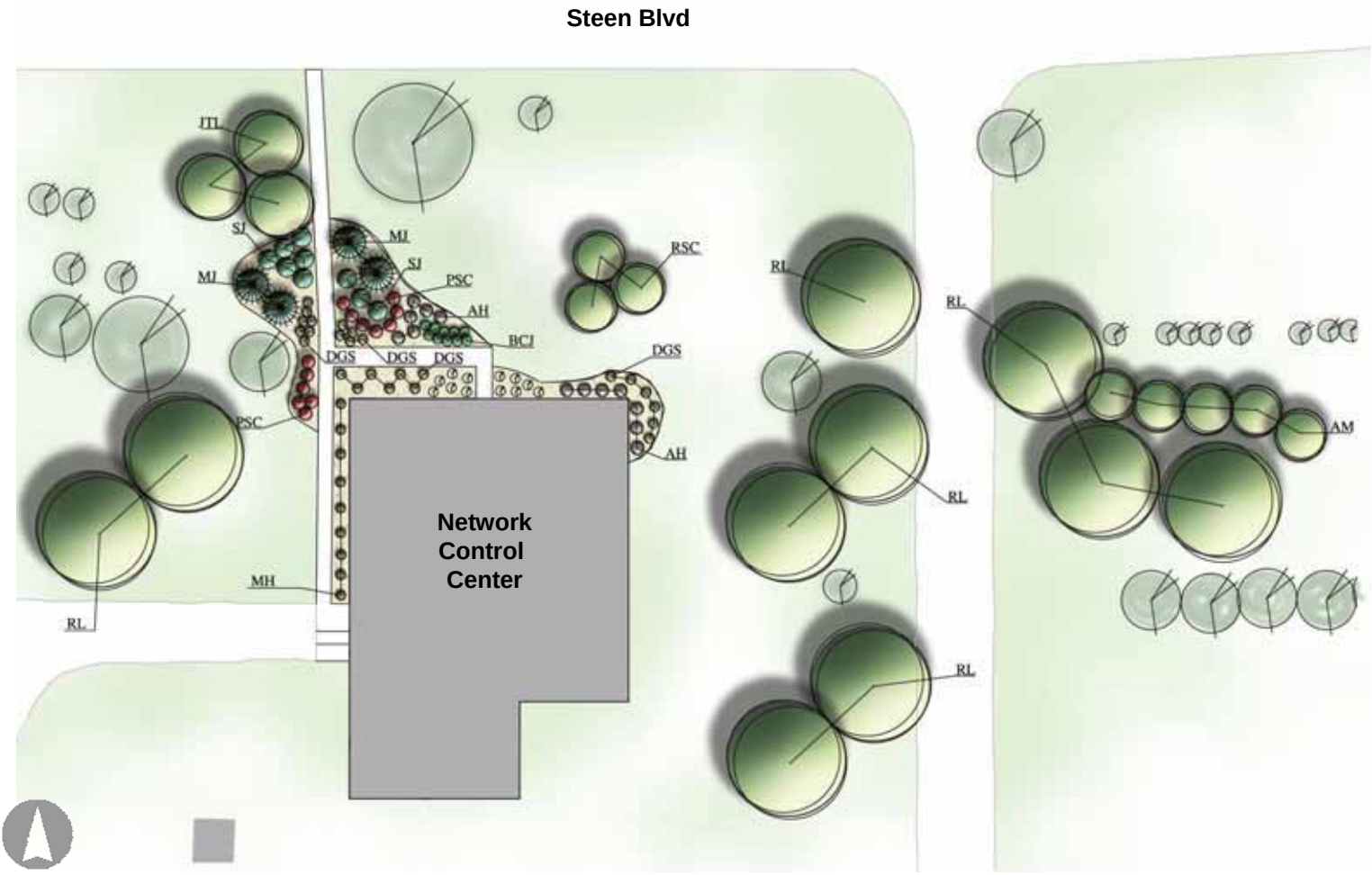


PROJECT DESCRIPTION

Bldgs 101 and 102 are in dire need of new landscaping. Bldg 101, which is composed of finance and personnel lacks a professional landscape to tie it in with the rest of the base. Bldg 102 currently does not have any landscaping. Both Bldgs are located in our Administrative area along Steen Blvd. This landscape is a companion project to a pavements removal project.

Landscape Network Control Center

JFSD200513 Awaiting Funds

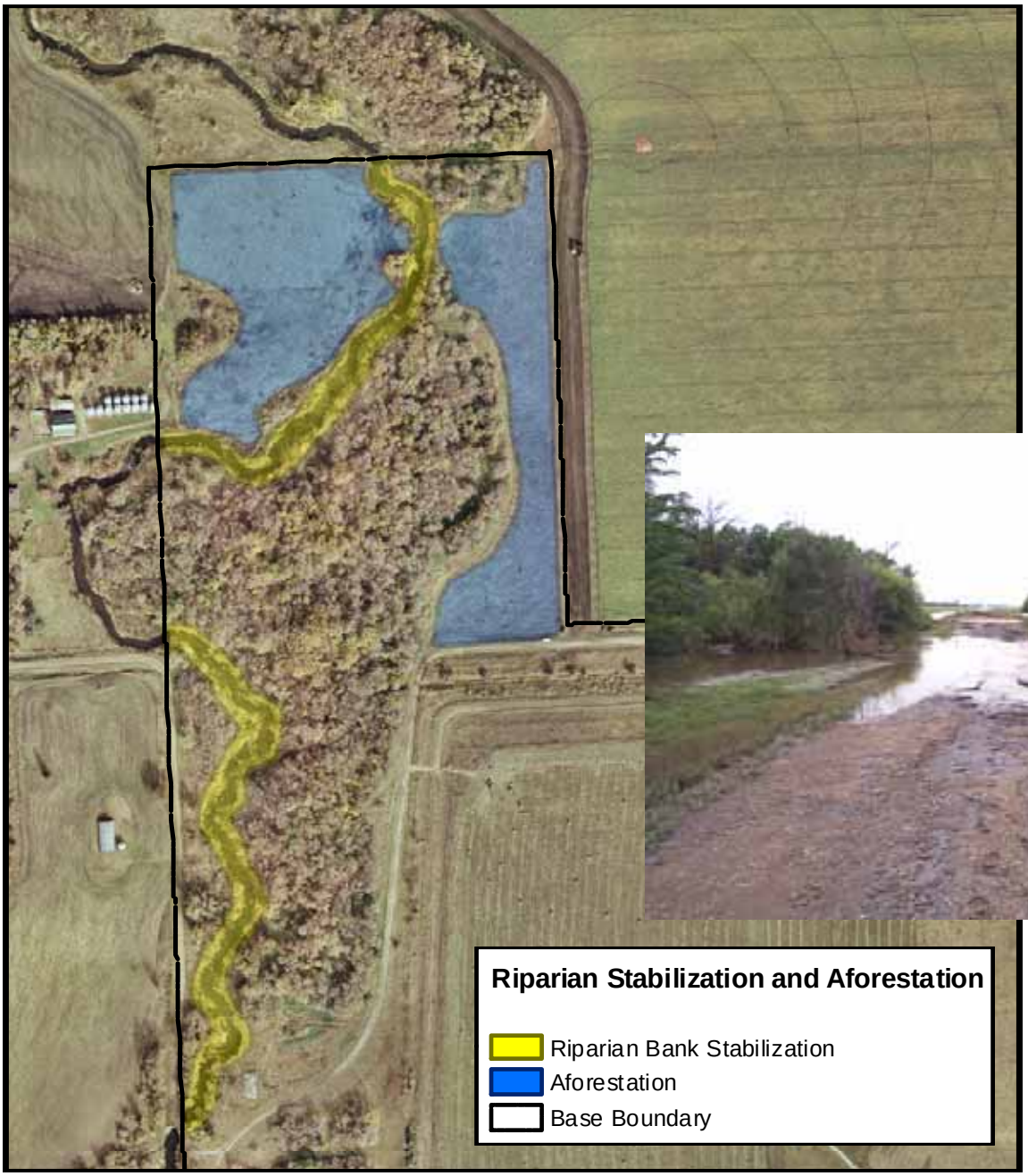


PROJECT DESCRIPTION

The Network Control Center, a windowless structure, is a focal point along Steen Blvd. Shelterbelts are located on both sides of the facility, and trees and shrubbery are needed to blend in with the rest of the surrounding landscape.

Riparian River Bank Stabilization and Aforestation

JFSD536050, JFSD536051 Base Programmed



PROJECT DESCRIPTION

Reduce erosion and slumping events into the Turtle River, a geographically significant riparian corridor, and restore/repair the natural lowland woodland forest community to enhance/provide habitat. This lowland community is ranked by the North Dakota Natural Heritage Inventory as imperiled in the state. The woodland also provides essential habitat for state threatened migratory birds identified in a 2004 biological survey of the installation. Native shrubs and trees will be planted to stabilize the river bank and provide habitat. Plant species selected will benefit the most wildlife species, and also preserve the 100 year floodplain.

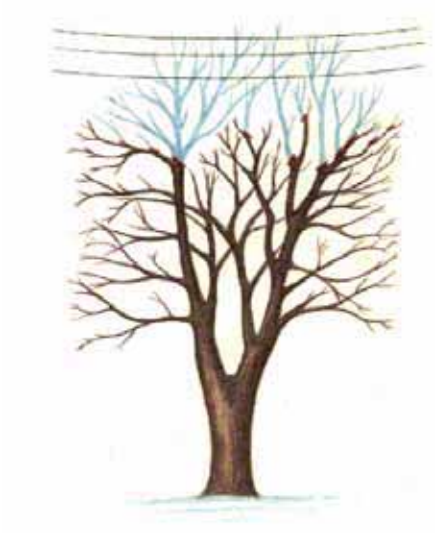
COMPATIBILITY

COMPATIBILITY SUMMARY

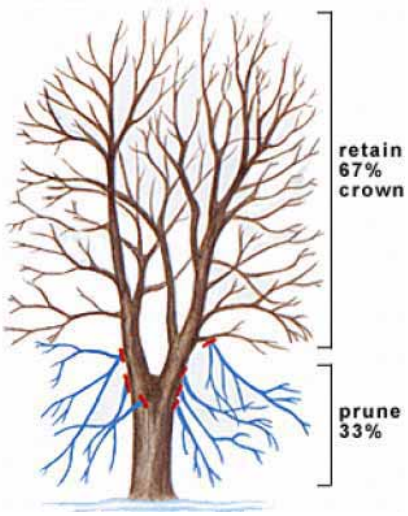
Maintenance Issues

Trimming and Pruning Procedures

All tree resources located within the semi- improved and improved maintenance zones are included in a 3 to 5 year pruning cycle. Pruning shall be accomplished in accordance with industry (ANSI Z133.1- 1994) standards. Class II medium pruning shall be used in general on all trees. Class IV pruning shall be used only for lifting, removal, and/or cutback of branches that conflict with normal traffic or safety in the vicinity of the trees. Minimum safety clearance is 14 feet over streets, 12 feet over driveways, 8 feet over walk areas, and 4 feet from buildings. Other trees shall be pruned as required to provide safety, clearances and/or to prevent structural damage to facilities. Topping and de borning shall not be permitted. All trees shall be trimmed/pruned within 10 feet of utility poles/power lines. Shrubs, small trees, and other plants shall be maintained according to the American Society of Landscape Architect's standards. They shall be pruned as required to maintain their natural growth characteristics. Shrubs and small trees shall be trimmed and pruned to enhance the beauty and health of the plant. Hedges shall be maintained to their natural mature height and shape. Broadleaf evergreens and flowers beds shall be pruned annually or as required maintaining clearances of minimum of 3 inches from buildings, sidewalks, or other obstructions.



Crown reduction - branches to be removed are shaded in blue; pruning cuts should be made where indicated with red lines. To prevent branch dieback, cuts should be made at lateral branches that are at least one-third the diameter of the stem at their union.



Crown raising - branches to be removed are shaded in blue; pruning cuts should be made where indicated with red lines. The ratio of live crown to total tree height should be at least two-thirds.

General Maintenance

Trees and shrubs shall be relocated as necessary to save the resource and reduce costs. It is estimated that 100 trees and/or bushes will need to be relocated annually at GFAFB. Other maintenance of landscaped areas, based on need, will include fertilizing, watering, edging, weeding, maintaining mulch, and repairing or replacing damaged plants in shrub and plant beds. Weeding consists of manual or mechanical removal.

COMPATIBILITY SUMMARY

Natural Resources

Over the long term, bring together and integrate all management activities in a way that sustains, promotes, and restores the health and integrity of ecosystems and that enhances the human environment at GFAFB, ND.

Natural resource projects have been included in this "Green Plan" that are discussed in the Integrated Natural Resources Management Plan (INRMP). For example, planting vegetation structures such as shelterbelts is an essential tool on the Northern Great Plains to include planning for wildlife habitat and protection, improving energy conservation for buildings and transportation systems, reducing air pollution and runoff, and trapping sediment.

Ecosystem Management and Biodiversity

Implementing the "Green Plan" projects will meet many of the INRMP goals. Incorporating the concept of ecosystem management and emphasizing species diversity is perhaps the most important. This will provide for managing the most species, instead of specializing on only the needs of a few. For example, planting native tree species in the proposed projects and managing them appropriately will provide essential cavity nesting space, essential fruit and nut food resources, storm cover protection for wildlife, and stabilization of soils. Enhancement of wildlife habitats is fundamental to landscape-scale ecology. Management of these resources should include recognizing the potential benefits of mostly-dead trees located in shelterbelts, grove plantings, and riparian woodlands. Many Northern Plains species use these habitats like: woodpeckers, owls, flickers, bluebirds, merlins, kestrels, swallows, wrens, squirrels, raccoons, chipmunks, and white-footed mice. Maintenance of these areas is minimal, can eliminate overspending and reduce costs, and protect the base from devastation by pestilence and disease.

Outdoor Recreation and Environmental Education

Enhancing outdoor recreation and providing natural resource education is another important goal of the GFAFB INRMP. The development of interpretive signs, construction of a butterfly garden, vegetation control in Off-Road Vehicle areas, and improvement of multi-use trail areas all contribute to this goal. Interpretive signs will help promote and educate residents about native species management and biodiversity developments in the "Prairie View Nature Preserve". The nature preserve was designed for the community to experience the native grassland vegetation of the prairie that once covered this area before settlement. It is intended to serve as an educational tool to get people connected to the land and their environment. The preserve will be an excellent asset to "Earth Day", "Arbor Day", and everyday events with the local schools, and child development center.

COMPATIBILITY SUMMARY

Landscape Architectural Compatibility

Material	Size	Specifications	Note
Bryant Red Rock	1-1/2”	Minimum 2” depth	Avoid using rock near child care facilities and structures.
River Rock	1-1/2” +	Minimum 2” depth. In bulk, known as aggregate rock.	Avoid using rock near child care facilities and structures.
Organic Shredded Mulch*	1-2”	Minimum 3” depth of Cypress or Cedar shredded mulch. Must be finely shredded wood, not bark.	Does tend to blow due to windy climate.
Flexible Steel Edging	4” high, 3/16” wide, 10’ or 20’ segments	Use black galvanized steel edging. Install with stakes interconnecting the segments. Bury 1/3 to 1/2 of edging.	Avoid using steel edging along sidewalks and curbing. Grade soil at least 2 inches below edge of concrete in order to contain mulch layer.
Polypropylene	Min 5 oz. Fabric	Bury or staple the edges to prevent the weed barrier from blowing. Lay out fabric continuously so as to minimize the need to overlap. When necessary, overlap 1-2 ft, then staple the overlapping layer down.	This material has the same texture as burlap and is not to be confused with black plastic.
Topsoil Spread	Min. 2” - 6” spread depending on soil condition.	Till added soil and existing soil to a depth of 8-12 inches using a tiller or similar equipment. During tillage operations all sticks, stones, roots, and other objectionable materials shall be removed	Soil shall be pulverized well and brought to an even smooth surface before installing fabric. If the soil condition is not known, a soil test may be necessary.
Pre-emergent Herbicide		Apply in March or early April to reduce the amount of weed growth.	The correct herbicide depends on the strain(s) of weeds present.
Tree Guards		Use gray colored guard, with holes to moderate temperature and humidity.	Guards should be loose enough to allow air to flow through the space between the stem and the guard. Guards should be removed before the stem out-grows the guard diameter.
Sod		Kentucky Blue Grass Mix	Never use grass seed unless specified by Base Civil Engineer.

* All trees and shrubs planted in turf must be cleared of turf within a 3’ diameter circle around the trunks and surrounded with organic shredded mulch to a depth of 3”-5”.

The Grand Forks AFB Approved Plant List can be found in the Appendix.

All planting beds must use each of these materials.

All planting beds must use at least one of these materials.

COMPATIBILITY SUMMARY

Landscape Architectural Compatibility

Parking

•Install curbed medians at the ends of parking rows, or full length. Formally planted and curbed medians reduce the massive appearance of parking areas and also provide shade to vehicles.

•Landscape materials can be used to screen parking areas from view along major circulation routes or near high visibility facilities. Berms and informal evergreen shrub plantings are effective solutions year round.

•Berms should be used whenever possible to screen the view of parking lots from streets and as a physical barrier between parking lot and buildings to make set back distances effective.

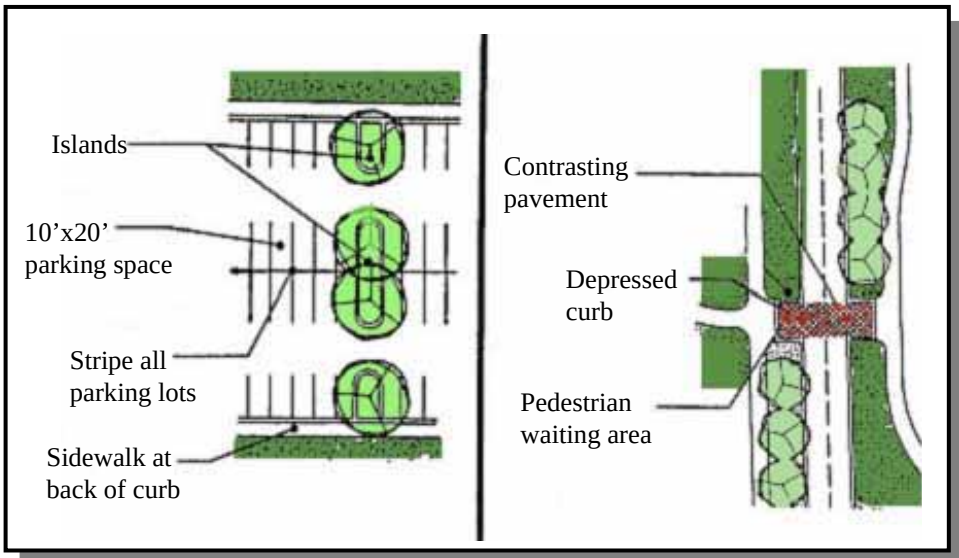
Berming

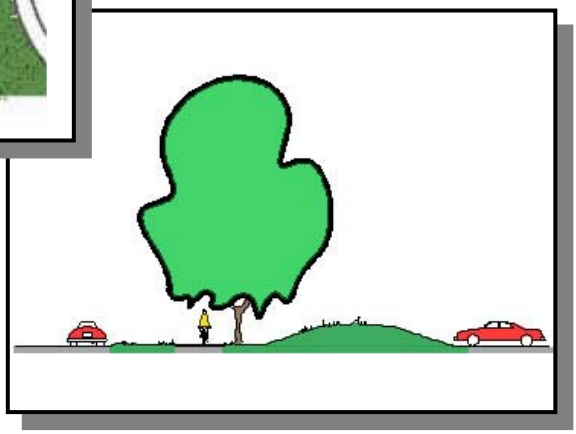
•Berms can also be used in large, flat open areas to help define a space, or to direct or intercept water runoff.

•Berm slopes need to be soft and gentle and carefully integrated into the overall grading plan of a project. Excess soil from building foundation excavation operations may be used to create berms.

•Landscape treatment and berming of parking areas should always consider mowing and snow removal requirements to avoid the potential of increased long term maintenance.

•The slope of the berm should not exceed 25% to 30%.





COMPATIBILITY SUMMARY

Landscape Architectural Compatibility

Informal Tree Spacing

•Varied spacing

•Use in areas where screening or shelterbelts are necessary.

Formal Tree Spacing

•30’- 40’ spacing

•Use on Steen Blvd., Louisiana St., Holzapple St., and along Community and Unaccompanied Housing pedestrian paths.

COMPATIBILITY SUMMARY

Landscape Architectural Compatibility

Intersections

• Use a variety of low growing plantings to distinguish main intersections such as these examples along Holzapple St.

PLANT PALLETTE

PLANT PALLETTE

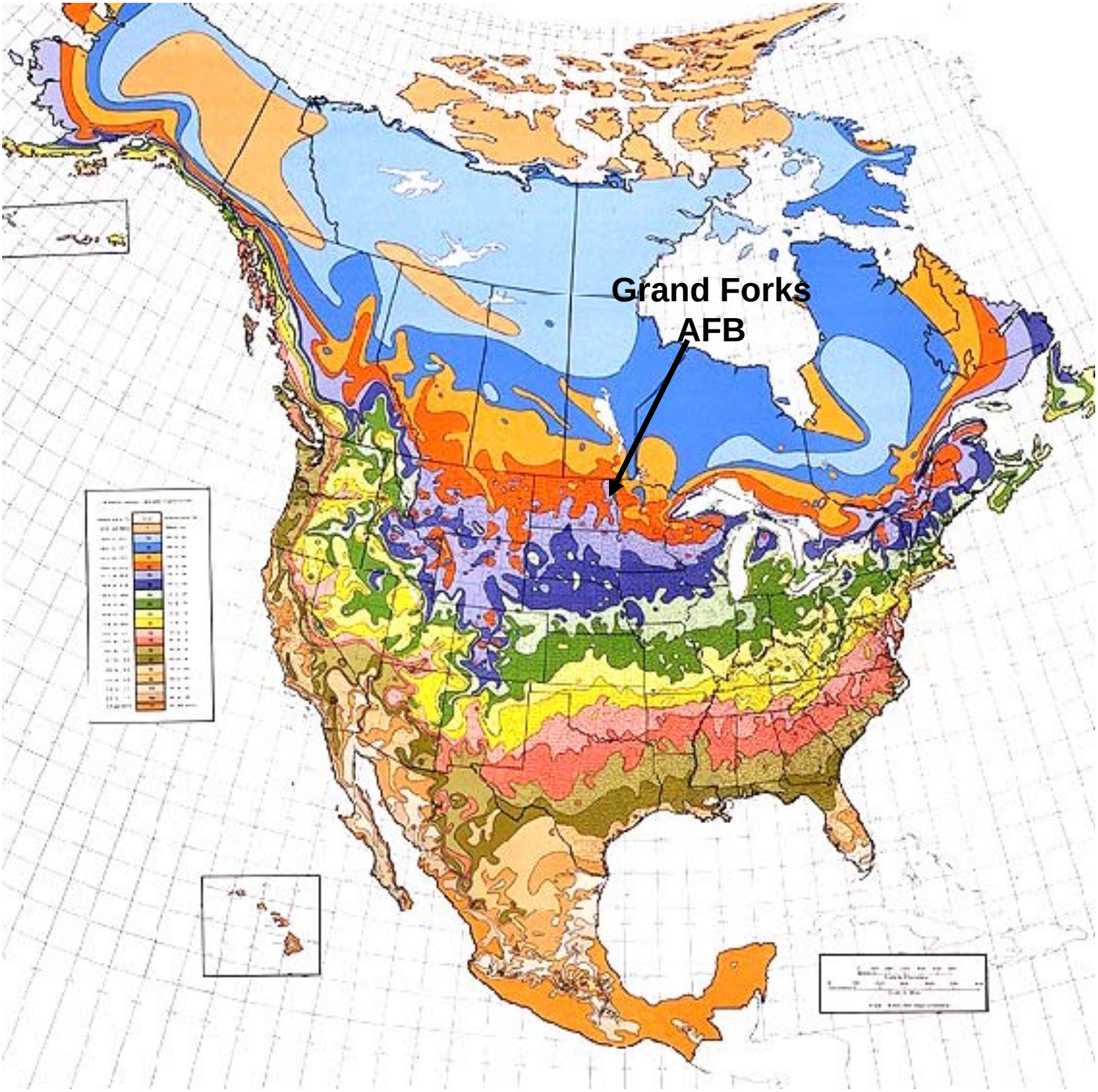
Plant selection is critical at Grand Forks AFB because of extreme climate conditions found in the Northern Great Plains. The only places with similar climate to GFAFB are Southern Siberia, Mid Russia, and Northern China. Landscape planning using local indigenous species is necessary because of these extremities. Plants low in maintenance are also a desired quality for installation landscapes to reduce costs. Finding plants that are indigenous, low in maintenance, and of significant landscape value can therefore be challenge in this region.

The plant pallette for GFAFB has been tested in the past for excellence on the installation and throughout the Red River Valley with recommendations from local university researchers and county extension agents. The next few pages depict a list of the best plant choices for Grand Forks AFB.

When designing, it is important to include a heterogeneous mixture of several species to minimize the effects of disease. Within every design, we make sure that we have landscape value for every season. Each design should have early and late summer blooms, dazzling fall color, and winter significance such as unique stem color or a roughly textured bark for a beautiful winter silhouette.

'Signature' plants are used throughout the installation to highlight visible areas and showcase the unique flora and fauna of the region. The Stela D'Oro Daylily is one such signature plant that is used in these areas.

USDA HARDINESS ZONE MAP



APPROVED PLANT LIST

*** Species Native to North Dakota**

DECIDUOUS TREES

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT (Feet)	MINIMUM PLANT SIZE STANDARDS (Caliper)	COMMENTS	XERI-SCAPE	SALT TOLER.	STREET-SCAPE	ACCENT	SCREEN	FOUNDATION	PARKING
Acer tataricum *	Tatarian Maple	15’-20’	2”	Bright red in fall							
Acer platanoides 'Pond'	Emerald Lustre Maple	40’-60’	2-3”	Globed form							
Acer Saccharinum *	Silver Maple	40’-60’		Not recommended as street tree because of limb breakage							
Aescules glabra 'Homestead'	Homestead Buckeye	30’-50’	2”								
Betula papyrifera	Paper Birch	30’-40’	2”								
Betula pendula v. laciniata	Cutleaf Weeping Birch	30’-40’	2”								
Celtis occidentalis *	Common Hackberry	50’-70’	2-3”								

APPROVED PLANT LIST

BOTANICAL NAME	COMMON NAME	HEIGHT (Feet)	PLANT SIZE (Caliper)	COMMENTS	XERI-SCAPE	SALT TOLER.	STREET-SCAPE	ACCENT	SCREEN	FOUND ATION	PARKING
Crataegus arnoldiana	Arnold Hawthorne	15’-20’	6’	Bright red fruit							
Crataegus crus-galli var. inermis	Thornless Cockspur Hawthorn	15’-20’	6’	Contains fruit							
Elaeagnus Angustifolia *	Russian olive	20’-25’	2”								
Fraxinus americana 'Northern Blaze'	Northern Blaze White Ash	50’-60’	2”-3”	Purple leaves in fall							
Fraxinus nigra 'Fallgold'	Fallgold Ash	50’	2”-3"								
Fraxinus pennsylvanica *	Green Ash	50’-60’	2”-3"								
Fraxinus pennsylvanica ‘Wahpeton‘ *	Dakota Centennial Ash	50’-60’	2”-3”								
Fraxinus pennsylvanica 'Marshall's Seedless‘ *	Marshall's Seedless Ash	50’-60’	2-3”	Seedless variety							
Fraxinus pennsylvanica 'Leeds‘ *	Prairie Dome Ash	50’-60’	2”-3”	Densely oval to globular							
Fraxinus pennsylvanica 'Bergeson‘ *	Bergeson Ash	50’-60’	2”-3”								

APPROVED PLANT LIST

BOTANICAL NAME	COMMON NAME	HEIGHT (Feet)	PLANT SIZE (Caliper)	COMMENTS	XERI-SCAPE	SALT TOLER.	STREET-SCAPE	ACCENT	SCREEN	FOUNDATION	PARKING
Fraxinus pennsylvanica 'Patmore‘ *	Patmore Ash	50’-60’	2”-3”								
Fraxinus pennsylvanica 'Rugby‘ *	Prairie Spire Ash	50’-60’	2”-3”	Densely narrow and upright							
Malus x 'Kelsey'	Kelsey Crabapple	15’-20’	2”								
Malus x 'Radiant'	Radiant Crabapple	15’-18’	2”								
Malus x 'Red Splendor'	Red Splendor Crabapple	15’-18’	2”								
Malus x 'Selkirk'	Selkirk Crabapple	15’-20’	2”								
Malus x 'Spring Snow'	Spring Snow Crabapple	15’-18’	2”	Fruitless, white flowering tree							
Populus alba *	White Poplar	40’-60’	2”-3”								
Populus x canescens 'Tower'	Tower Poplar	35’-40’	2”-3”								
Populus tremuloides *	Quaking Aspen	40’-50’	2”								

APPROVED PLANT LIST

BOTANICAL NAME	COMMON NAME	HEIGHT (Feet)	PLANT SIZE (Caliper)	COMMENTS	XERI-SCAPE	SALT TOLER.	STREET-SCAPE	ACCENT	SCREEN	FOUND ATION	PARKING
Prunus maackii	Amur Chokecherry	20’-30’	2”								
Prunus padus commutata	Mayday Tree	15’-20’	2"								
Prunus virginiana 'Schubert'	Canada Red Chokecherry	20’-30’	2”-3"	Deep red leaves							
Quercus macrocarpa *	Bur Oak	60’-80’	2”-3"								
Salix pentandra *	Laurel Leaf Willow	35’-45’	2”-3"	Low rounded tree, prefers wet soils							
Salix alba 'Niobe'	Golden Weeping Willow	40’-50’	2”-3"	Weeping form, prefers wet soils							
Salix x 'Prairie Cascade‘ *	Prairie Cascade Willow	35’-45’	2”-3"	Weeping shade tree, prefers wet soils							
Sorbus aucuparia	European Mountain Ash	20’-30’	2”-3"								
Syringa reticulata ‘Ivory Silk’	Ivory Silk Lilac	15’-20’	2”-3”	Fruitless, white flowering tree							
Tilia americana *	American Linden	75’-90’	2”-3"								
Tilia euchlora 'Redmond'	Redmond Linden	40’-60’	2”-3"								

APPROVED PLANT LIST

DECIDUOUS SHRUBS

BOTANICAL NAME	COMMON NAME	HEIGHT (Feet)	PLANT SIZE	FLOWER COLOR AND SEASON	PLANT CONDITION	XERI-SCAPE	SALT TOLERANCE	STREET-SCAPE	ACCENT	SCREEN	FOUND ATION	PARKNG
Acer ginnala 'Bailey Compact'	Bailey Compact Amur Maple	6’-8’	3 gal	Bright red leaves in fall	F/P							
Aronia melanocarpa 'Elata'	Glossy Black Chokeberry	4’-6’	3 gal		F/P							
Berberis thunbergii var. atropurpurea 'Crimson Pygmy'	Crimson Pygmy Barberry	1’	3 gal		F							
Berberis thunbergii var. atropurpurea 'Rose Glow'	Rose Glow Japanese Barberry	3’-4’	3 gal		F							
Caragana arborescens *	Siberian Peashrub	12’-15’	3 gal		F/P							
Caragana pygmaea	Pygmy Peashrub	3’	3 gal		F/P							
Cornus alba 'Ivory Halo'	Ivory Halo Dogwood	6’-8’	3 gal	Variegated Leaves	F/S							
Cornus alternifolia	Pagoda Dogwood	8’-10’	3 gal	Creamy white in May	F/S							

APPROVED PLANT LIST

BOTANICAL NAME	COMMON NAME	HEIGHT (Feet)	PLANT SIZE	FLOWER COLOR AND SEASON	PLANT COND.	XERI-SCAPE	SALT TOLER.	STREET-SCAPE	ACCENT	SCREEN	FOUND ATION	PARKNG
Cornus sericea *	Redosier Dogwood	8’-10’	3 gal	Creamy white flowers in May	F/S							
Cornus sericea 'Cardinal'	Cardinal Dogwood	8’-10’	3 gal	Creamy white flowers in May	F/S							
Cornus sericea 'Isanti'	Isanti Dogwood	5’-6’	3 gal	Creamy white flowers in May	F/S							
Cotoneaster lucidus	Peking Cotoneaster	8’-10’	3 gal	Black fruit in fall	F							
Euonymous alata 'Compacta'	Dwarf Winged Euonymous	4’-5’	3 gal	Bright red leaves in fall	F							
Forsythia x 'Meadowlark'	Meadowlark Forsythia	6’-9’	3 gal	Yellow flowers in spring	F/P							
Forsythia x 'Northern Sun'	Northern Sun Forsythia	6’-9’	3 gal	Yellow flowers in spring	F/P							
Forsythia viridissima 'Broxensis	Dwarf Forsythia	2’-3’	3 gal	Yellow flowers in spring	F/P							
Lonicera claveyi nana 'Miniglobe'	Miniglobe Honeysuckle	2’-3’	3 gal	Yellow flowers in spring	F/S							
Lonicera xylosteum 'Emerald Mound'	Emerald Mound Honeysuckle	3’	3 gal	Yellowish -White flowers	F/P							

APPROVED PLANT LIST

BOTANICAL NAME	COMMON NAME	HEIGHT (Feet)	PLANT SIZE	FLOWER COLOR AND SEASON	PLANT COND.	XERI-SCAPE	SALT TOLER.	STREET-SCAPE	ACCENT	SCREEN	FOUND ATION	PARKNG
Physocarpus opulifolius	Common Ninebark	6’-8’	3 gal	White flowers in spring	F/S							
Physocarpus opulifolius 'Nanus'	Dwarf Ninebark	4’-6’	3 gal	White flowers in spring	F/S							
Potentilla fruticosa 'Abbotswood'	Abbotswood Cinquefoil	3’	3 gal	White flowers in June until frost	F							
Potentilla fruticosa 'Coronation Triumph'	Coronation Triumph Cinquefoil	3’-4’	3 gal	Bright yellow flowers in June until frost	F							
Potentilla fruticosa 'Kathryn Dykes'	Kathryn Dykes Cinquefoil	2’	3 gal	Lemon Yellow flowers in June until frost	F							
Potentilla fruticosa 'Primrose Beauty'	Primrose Beauty Bush Cinquefoil	2’-3’	3 gal	Larger pink flowers in June until frost	F							
Prunus tomentosa	Nanking Cherry	8’-10’	3 gal		F							
Rhus glabra	Smooth Sumac	10’	3 gal		F/S							
Rhus typhina	Staghorn Sumac	15’	3 gal		F/S							
Ribes alpinum	Alpine Currant	3’-5’	3 gal		F/S							

APPROVED PLANT LIST

BOTANICAL NAME	COMMON NAME	HEIGHT (Feet)	PLANT SIZE	FLOWER COLOR AND SEASON	PLANT COND.	XERI-SCAPE	SALT TOLER.	STREET-SCAPE	ACCENT	SCREEN	FOUND ATION	PARKNG
Spirea x bumalda 'Froebelii'	Froebel Spirea	3’-4’	3 gal	Pink flowers in June	F/P							
Spirea japonica spp.	Japanese Spirea	1'-4’	3 gal	White flowers in June	F/P							
Spirea japonica 'Anthony Waterer'	Anthony Waterer Spirea	2’-3’	3 gal	Rose-pink flowers in June	F/P							
Spirea japonica 'Goldmound'	Goldmound Spirea	2’-3’	3 gal	Pink flowers in June	F/P							
Spirea japonica 'Little Princess'	Little Princess Spirea	1’-2’	3 gal	Pink flowers in June	F/P							
Spirea trilobata 'Fairy Queen'	Fairy Queen Spirea	3’	3 gal	White flowers in Spring	F/P							
Spirea nipponica 'Snowmound'	Snowmound Spirea	2’-3’	3 gal	White flowers in spring	F/P							
Syringa meyeri ‘Palibin’	Dwarf Korean Lilac	4’-5’	3 gal	Lilac to lavender flowers in early summer	F							

APPROVED PLANT LIST

BOTANICAL NAME	COMMON NAME	HEIGHT (Feet)	PLANT SIZE	FLOWER COLOR AND SEASON	PLANT COND.	XERI-SCAPE	SALT TOLER.	STREET-SCAPE	ACCENT	SCREEN	FOUND ATION	PARKNG
Syringa patula 'Miss Kim'	Miss Kim Lilac	3’-5’	3 gal	Pale lilac flowers in early summer	F							
Syringa x prestoniae 'Miss Canada'	Miss Canada Lilac	6’-9’	3 gal	Early summer flowers	F							
Syringa villosa 'James MacFarlane'	James MacFarlane Lilac	8’	3 gal	Early summer flowers	F							
Syringa vulgaris alba	Common White Lilac	12’-15’	3 gal	Early summer flowers	F							
Syringa vulgaris purpurea	Common Purple Lilac	12’-15’	3 gal	Early summer purple flowers	F							
Tamarix ramosissima	Five-stemmed Tamarix *	10’-15’	3 gal		F							

APPROVED PLANT LIST

CONIFEROUS TREES

BOTANICAL NAME	COMMON NAME	HEIGHT Feet	PLANT SIZE	PLANT CONDITION	XERI-SCAPE	SALT TOLER.	STREET-SCAPE	ACCENT	SCREEN	FOUNDATION	PARKNG
Juniperus scopulorum	Rocky Mountain Juniper	20’-30’	6'	F/P							
Juniperus scopulorum *	Medora Juniper	20’-30’	6'	F/P							
Juniperus virginiana	Eastern Redcedar	30’-40’	6'	F/P							
Larix sibirica	Siberian Larch	30’-40’	6’	F/P							
Picea glauca var. densata	Black Hills Spruce	40’-50’	6’	F/P							
Picea pungens	Colorado Spruce	50’-60’	6’	F							
Picea pungens var. Glauca	Colorado Blue Spruce	50’-60’	6’	F							
Pinus ponderosa	Ponderosa Pine	50’	6'	F							
Pinus sylvestris	Scotch Pine	50’-60’	6'	F/P							

APPROVED PLANT LIST

CONIFEROUS SHRUBS

BOTANICAL NAME	COMMON NAME	HEIGHT (Feet)	PLANT SIZE	PLANT CONDITION	XERI-SCAPE	SALT TOLERANCE	STREET-SCAPE	ACCENT	SCREEN	FOUNDATION	PARKNG
Juniperus chinensis 'Maney'	Maney Juniper	5’-6’	3 gal	F/P							
Juniperus chinensis 'Mint Julep'	Mint Julep Juniper	5’-6’	3 gal	F/P							
Juniperus chinensis 'Sea Green'	Sea Green Juniper	3’	3 gal	F							
Juniperus horizontalis 'Blue Chip'	Blue Chip Juniper	1’	3 gal	F							
Juniperus horizontalis 'Prince of Wales'	Prince of Wales Juniper	12”	3 gal	F							
Juniperus horizontalis 'Wiltonii'	Wilton Carpet Juniper	4”-6"	3 gal	F							
Juniperus sabina 'Broadmoor'	Broadmoor Juniper	1’-2’	3 gal	F							

APPROVED PLANT LIST

BOTANICAL NAME	COMMON NAME	HEIGHT (Feet)	PLANT SIZE	PLANT CONDITION	XERI-SCAPE	SALT TOLERANCE	STREET-SCAPE	ACCENT	SCREEN	FOUND ATION	PARKNG
Juniperus sabina 'Calgary Carpet'	Calgary Carpet Juniper	1’	3 gal	F/P							
Juniperus sabina 'Pepin'	Pepin Savin Juniper	2’-3’	3 gal	F/P							
Picea abies 'Pumila'	Dwarf Norway Spruce	3’	3 gal	F							
Pinus mugo pumilo	Dwarf Mugo Pine	4’	3 gal	F							
Pinus mugo var. mugo	Mugo Pine	6’-8’	3 gal	F							
Taxus x media 'Taunton'	Taunton Spreading Yew	4’-5’	3 gal	F/S							
Thuja occidentalis 'Hetz Midget'	Hetz Midget Arborvitae	2’	3 gal	F/P							
Thuja occidentalis 'Techny'	Techny Arborvitae	12’-15’	3-5 gal	F/S							

APPROVED PLANT LIST

PERRENIALS

BOTANICAL NAME	COMMON NAME	HEIGHT INCHES	PLANT SIZE	LIFE- SPAN (yr)	PLANT CONDITION	FLOWERING PERIOD	FLOWER COLOR	WATERING REQUIRMNT	NOTES AND COMMENTS
Achillea ptarmica 'The Pearl'	Achillea 'The Pearl'	18"	1 gal	Ind	F	Jl-A	White	L-M	hardy, easy culture, cut flower
Bergenia cordifolia	Bergenia	18"	1 gal	Ind	F	M-Jn	Wt/Pnk	M-H	bold evergreen leaves, needs snow
Campanula glomerata	Clustered Bellflower	12"-24"		Ind	F	Jl	Blue/Wt	M	hardy, easy culture
Clematis spp.	Clematis	Varies	1 gal	Ind	F/P	Jn-A	Varies	M	prefers cool site: east, north
Heuchera sanguinea	Coralbells	18"	1 gal	10	F/S	Jn-A	Wt/Pnk/ Pur	L	mounded with flower stalks, rock gard.
Hemerocallis spp.	Daylilies	Varies	1 gal	10	F/S	Varies	Varies	L-M	Showy mid-summer bloom
Hemerocallis Stella De Ora	Stella De Ora Daylily	15"	1 gal	10	F	Jn-Sep	Golden yellow	L-M	Showy mid-summer bloom
Hemerocallis 'Little Winecup'	Little Winecup Daylily	15"	1 gal	10	F	Jl-A	Deep Purple	L-M	Showy mid-summer bloom

APPROVED PLANT LIST

BOTANICAL NAME	COMMON NAME	HEIGHT INCHES	PLANT SIZE	LIFE- SPAN (yr)	PLANT CONDITION	FLOWERING PERIOD	FLOWER COLOR	WATERING REQUIRMNT	NOTES AND COMMENTS
Hemerocallis 'Summer Wine'	Summer Wine Daylily	23”	1 gal	10	F	Jn to frost	Red wine	L-M	Showy mid-summer bloom
Hemerocallis 'Raspberry Wine'	Raspberry Wine Daylily	20”	1 gal	10	F	Jn to frost	Rasp. Red	L-M	Showy mid-summer bloom
Hemerocallis 'Little Grapette'	Little Grapette Daylily	18”-24”	1 gal	10	F	Jn to frost	Deep Grape	L-M	Showy mid-summer bloom
Linum perenne	Perennial Flax	18”-24”		Ind	F	Jn-A	Blue/Wt	M	light delicate foliage effect
Dictamnus albus	Gasplant	30”	1 gal	Ind	F	Jn	Pnk/Wt	M	foliage mound with flower spikes
Hosta spp.	Hosta (Plantain Lily)	18”-30”	1 gal	Ind	P/S	Jn-A	Bl/Lav/Wt	M	bold foliage, some var. variagated
Paeonia lactiflora	Common Peony	18”-30”	1 gal	Ind	F	Jn-Jl	Pur/Rd/ Wt	M	attractive foliage afterbloom
Phlox paniculata	Perennial Phlox	24”-30”	1 gal	Ind	F	Jl-A	Lav/Pur/ Rd	M	plant in open sites
Yucca glauca	Yucca	24”	1 gal	Ind	F		Creamy White	L	prefers dry soil

APPROVED PLANT LIST

BOTANICAL NAME	COMMON NAME	HEIGHT	PLANT SIZE	PLANTING CONDITION	SPACING
Aegopodium podagraria 'Variegatum'	Snow on the Mountain	6”-14"	1 gal	F/P	12”
Ajuga reptans	Carpet Bugle	2”-6"	1 gal	F/S	12”
Arctostaphylos uva-ursi	Bearberry	6”-12”	1 gal	F/P	12”-24”
Artemisia schmidtiana 'Nana'	Silver Mound Artemisia	12”	1 gal	F	24”
Euonymus fortunei 'Coloratus'	Purpleleaf Wintercreeper	6"	1 gal	P/S	12”
Lamium maculatum	Spotted Dead Nettle	12”	1 gal	F/P	18”
Pachysandra terminalis	Japanese spurge	6”-8”	1 gal	F/S	6”-12”
Paxistima canbyi	Cliffgreen	12”	1 gal	F/P	18”-24”
Sedum acre	Yellow Stonecrop	2”-6"	1 gal	F	4”-8”

Gen Del Eulberg
HQ AMC/A7
507 Symington Drive
Scott AFB Il 62225-5022

101

Date

319th Air Refueling Wing

Memo

⑆123456789⑆ 123456⑈ 101

INTERSECTIONS

•Sightline triangles are used at intersections to avoid accidents.

•50’ sightline triangles are used at 4-way stops and main intersections such as those along Steen and Eielson.

•30’ sightline triangles are used at all other intersections.

DRIVEWAYS AND PATHS

An ecological solution to soil stabilization and erosion control is turfstone. Turfstone is ideal for driveways and paths that need to blend in with their natural surroundings. This paving system is also a great way to upgrade secondary entrances to a facilities.

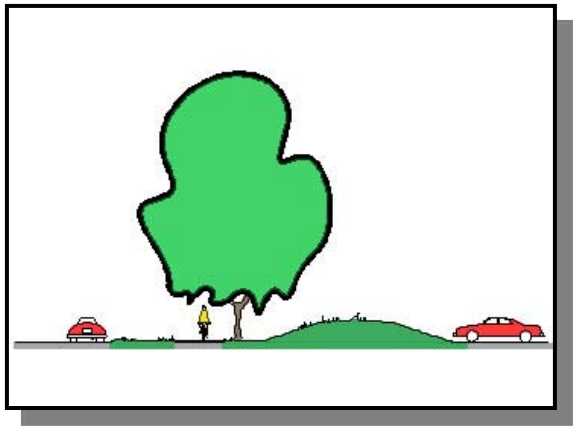
BERMS

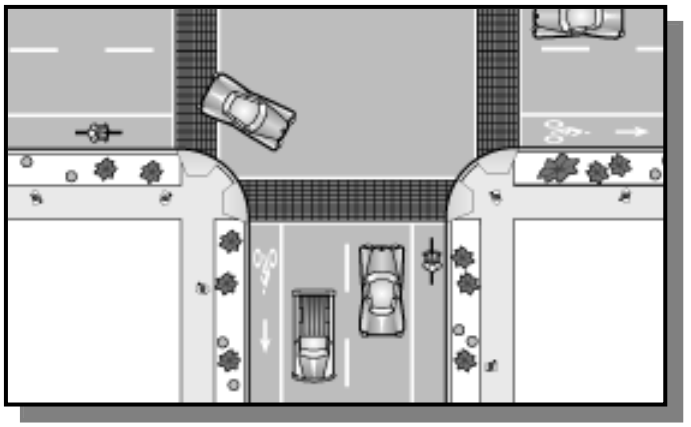
•Berms can also be used in large, flat open areas to help define a space, or to direct or intercept water runoff.

•Berm slopes need to be soft and gentle and carefully integrated into the overall grading plan of a project. Excess soil from building foundation excavation operations may be used to create berms.

•Landscape treatment and berming of parking areas should always consider mowing and snow removal requirements to avoid the potential of increased long term maintenance.

•The slope of the berm should not exceed 25% to 30%.





CROSSWALKS

•Crosswalks should be 10’ wide, or the width of the approaching sidewalk if it is greater. Two techniques to increase the visibility and effectiveness of crosswalks are:

•Striped (or "zebra") markings, which are more visible than double lines should be used on streets that are not highly visible.

•Textured crossings, using non-slip paving block or stamped concrete, which raise a driver's awareness through increased noise and vibration, should be used in the Community District, on Steen Blvd., and in the dormitories. Colored pavers increase the visibility of the crosswalk.

APPENDIX F
PUBLIC NOTICE AND INTERAGENCY RESPONSE

Air Force Base
Public Notice

Grand Forks Air Force Base has proposed the landscaping of multiple areas throughout the base, known as the "Green Plan".

An environmental assessment has been conducted and a finding of no significant impact has been determined for this action.

Anyone wishing to view the support documents to this action should contact the 319th Air Refueling Wing Public Affairs Office within the next 30 days at 747-5017 or 747-5608.

(March 2 & 4, 2006)

AFFIDAVIT OF PUBLICATION

STATE OF NORTH DAKOTA } SS.
COUNTY OF GRAND FORKS }

Lynn Boyko of said State and County being first duly sworn, on oath says:

That { she / he } is { a representative of the GRAND FORKS HERALD, INC.,

publisher of the Grand Forks Herald, Morning Edition, a daily newspaper of general circulation, printed and published in the City of Grand Forks, in said County and State, and has been during the time hereinafter mentioned, and that the advertisement of

Green Plan

a printed copy of which is hereto annexed, was printed and published in every copy of the following issues of said newspaper, for a period of 2 time (s) to wit:

3-2	Yr. 06		Yr.
3-4	Yr. 06		Yr.
	Yr.		Yr.
	Yr.		Yr.

and that the full amount of the fee for the publication of the annexed notice inures solely to the benefit of the publishers of said newspaper; that no agreement or understanding for a division thereof has been made with any other person and that no part thereof has been agreed to be paid to any person whomsoever and the amount of said fee is $18.96;

That said newspaper was, at the time of the aforesaid publication, the duly elected and qualified Official Newspaper within said County, and qualified in accordance with the law of the State of North Dakota to do legal printing in said County and State.

Publication Fee $ 18.96

ELAINE FAWCETT
NOTARY PUBLIC
STATE OF NORTH DAKOTA
My Comm. Exp. Feb. 7, 2007

Subscribed and sworn to before me this 6 day of Mar A.D. 06

Elaine Fawcett
Notary Public, Grand Forks, ND

Public Notices

Owner at the rate of $200.00 (non-refundable) per set. **Requests must be made on Contractor's own letterhead and must include a copy of his North Dakota Contractor's License or Certificate of Renewal, whichever is current.**

OWNER
Office of the Adjutant General
Contract Management Branch
P.O. Box 5511
Bismarck, North Dakota 58506-5511
Telephone: (701) 333-2069

Copies of the contract documents are on file at the Construction Plans Exchange in Bismarck, ND; Builders Exchanges in Devils Lake, Dickinson, Fargo, Grand Forks, Mandan, Minot, and Williston, North Dakota; Minneapolis and St. Paul, Minnesota; and at the offices of the Architect, Consulting Engineers, and the Owner.

Each bid shall be submitted in duplicate copy on the forms provided by the Owner and enclosed in a sealed opaque envelope upon which there is disclosed the necessary information as required by Supplementary Instructions to Bidders.

Each bid shall be accompanied by a separate sealed opaque envelope containing a bidder's bond made payable to The Adjutant General, State of North Dakota, and executed by the bidder as principle and by a surety company authorized to do business in North Dakota, in a sum equal to five percent (5%) of the bidder's highest total bid combination, including all add alternates to the bid items; conditioned that if bidder's proposal be accepted and the contract awarded to him, he within ten (10) days after notice of such award, will effect and execute a contract in accordance with the terms of his bid and a contractor's bond as required by law and the regulations and determinations of the Owner. AIA Document A310, Bid Bond, will be furnished by the Owner and should be used to execute the bid guarantee.

In compliance with Section 43-07-12 of the North Dakota Century Code, each contractor submitting a bid must have a copy of his North Dakota Contractor's License or certificate of renewal thereof issued by the secretary of state enclosed in the bid bond envelope; must be licensed for the highest amount of his total bid combination including add alternates; and such license must have been in effect at least ten (10) days prior to the date of the bid opening. No bid will be read or considered which does not fully comply with the provisions herein as to bonds and licenses, and any deficient bid submitted will be resealed and returned to bidder immediately.

The Owner reserves the right to hold all legitimate bids for a period of thirty (30) days after the date fixed for the opening thereof. It is the intent of the Owner to award a contract to the lowest and best bidder. The Owner further reserves the right to reject any and all bids and to waive irregularities, and shall incur no legal liability for the State for the payment of any monies until the contract is awarded and approved by the proper authorities.

In compliance with Section 48-02-06 of the North Dakota Century Code, the successful bidder shall be required to furnish bonds covering the faithful performance of the Contract and the payment of all obligations thereunder, and all additional obligations required by the laws of the state of North Dakota. Each bond shall be in an amount equal to the full contract sum.

DATED: 2 March 2006
OFFICE OF THE ADJUTANT GENERAL
Bismarck, North Dakota
By: /s/ JERALD L. ENGELMAN
Brig Gen, NDANG
Deputy Adjutant General
Contracting Officer
(March 2, 9 & 16, 2006)

INVITATION TO BID
PROJECT. Tower Addition and Packaging Conveyor Line
North Dakota Mill & Elevator Association
Grand Forks, North Dakota
BIDS CLOSE. Wednesday, April 5, 2006 at 2:00 PM Local Time
PROJECT #. 20061180
DATE OF ISSUE. February 2006
BY. EAPC
3100 DeMERS AVENUE
GRAND FORKS, NORTH DAKOTA 58201
PHONE: (701) 775-5507
FAX: (701) 772-3605
OUTLINE OF PROJECT. Addition of a tower and packaging conveyor line. Work includes demolition, excavating, concrete foundations

Public Notices

uments, in good condition, within 10 days following the bid date, the deposit will be refunded. If the bidder does not return the set of documents within the designated time, none of the deposit will be refunded.

Partial or complete sets of prints and specifications may be obtained from EAPC by other than the above. The sets or partial sets will be distributed upon receipt of payment for the information charged at the current reproduction rate. None of this payment will be refunded. Completeness and adequacy of the list of documents requested shall be the responsibility of the person making the request.

BID SECURITY. Bid Security in the amount of five (5%) percent of the Bid including all add alternates, must accompany each Bid in accord with the Instructions to Bidders 00100.7. Cash, Bidders Bond, cashier's checks or certified checks will be accepted.

NORTH DAKOTA LAW. All bidders must be licensed for the highest amount of their bids, as provided by North Dakota Century Code Section 43-07-05; and no bid will be read or considered which does not fully comply with the above provisions as to bond and licenses, and any bid deficient in these respects submitted will be re-sealed and returned to the bidder immediately.

PREBID MEETING. There will be a meeting of prospective bidders at 2:00 P.M. on Wednesday, March 22, 2006 at the ND Mill & Elevator Conference Room. All those with questions for the Owner and A/E are invited to attend.

THE OWNER reserves the right to waive irregularities, to reject and or all Bids and to hold all Bids for a period of 30 days after the date fixed for the opening thereof.

By order of: Chris Lemoine,
Production Operations Manager
(March 2, 9 & 16, 2006)

Air Force Base
Public Notice

Grand Forks Air Force Base has proposed the landscaping of multiple areas throughout the base, known as the "Green Plan".

An environmental assessment has been conducted and a finding of no significant impact has been determined for this action.

Anyone wishing to view the support documents to this action should contact the 319th Air Refueling Wing Public Affairs Office within the next 30 days at 747-5017 or 747-5608.
(March 2 & 4, 2006)

IN THE DISTRICT COURT OF GRAND FORKS COUNTY, STATE OF NORTH DAKOTA. In the Matter of the Estate of Donald Hartje, Deceased.

NOTICE TO CREDITORS

Notice is hereby given that the undersigned has been appointed personal representative of the above estate. All persons having claims against the said deceased are required to present their claims within three months after the date of the first publication of this notice or the claim will be forever barred. Claims must be mailed to the address below or filed with the Court.

Dated 27 February 2006.
Terry Hartje, Personal Representative
Henry H Howe, Howe and Seaworth
Attorneys at Law, 421 Demers Ave, Grand Forks, ND 58201.
Attorney for Personal Representative
(March 2, 9 & 16, 2006)

CITY OF THOMPSON
COUNCIL MEETING
February 6, 2006

The regular meeting of the City Council, City of Thompson, County of Grand Forks, ND was held February 6, 2006 at 7:00 p.m. Councilman Lander, Myers, and Wilhelmi were present. Mayor, Larimer and Councilman, Chandler were absent. Council approved the minutes of the previous meeting for January 9, 2006 with a motion by Councilman, Myers and a second by Councilman Wilhelmi. Council approved the financial report with a motion by Councilman Myers and a second by Councilman Wilhelmi. Council approved the payment of bills with a motion by Councilman Wilhelmi and a second by Councilman, Myers.

Next regular meeting will be held on March 6, 2006 at 7:00 p.m.

"Any Individual requiring special accommodations (i.e., alternative formatting of literature, an interpreter, or help in accessing the facility) should advise the City by contacting the City Auditor, Thompson City Office, Post Office Box 266, Thompson, ND. Phone: 701-599-2973. Requests should be made seven (7) days prior to meeting."

Councilman, Myers made a motion to approve the amendment to the October minutes

Public Notices

year. This pay schedule is effective beginning January 1, 2006.

Councilman, Wilhelmi approved the second reading of the said Resolution as read. Councilman, Myers seconded the motion. Motion passed.

First Reading: January 9, 2006
Second Reading: February 6, 2006
Adopted: February 6, 2006
CITY OF THOMPSON
By: Dean Larimer, Its Mayor
ATTEST: Barb Robinson, Its City Auditor

Councilman, Myers made a motion to approve a variance for Richard Paschke to be able to build a 3rd stall on the west side of his existing garage provided he gets written notorized approval from his adjacent land owners, Dan and Debbie Mayers. Councilman, Wilhelmi seconded the motion. Motion passed.

Councilman, Myers made a motion to adjourn the meeting. Councilman, Wilhelmi seconded the motion. Motion passed.
City Auditor
(March 2, 2006)

CITY OF THOMPSON
COUNCIL MEETING
Amended Minutes
October 3, 2005

The regular meeting of the City Council, City of Thompson, and County of Grand Forks, ND was held October 3, 2005 at 7:00 p.m. All members were present except Councilman, Wilhelmi. Council approved the minutes of the previous meeting for September 3, 2005 with a motion by Councilman, Chandler and a second by Councilman, Lander. Council approved the financial report a motion by Councilman, Chandler and a second by Councilman, Lander. Council approved the payment of bills with a motion by Councilman, Lander and a second by Councilman, Chandler.

Next regular meeting will be held on Monday, November 7, 2005 at 7:00 p.m.

"Any Individual requiring special accommodations (i.e., alternative formatting of literature, an interpreter, or help in accessing the facility) should advise the City by contacting the City Auditor, Thompson City Office, Post Office Box 266, Thompson, ND. Phone: 701-599-2973. Requests should be made seven (7) days prior to meeting."

Councilman, Lander made a motion to accept the rate increases for garbage at 9.1% per month and Dust control at $1.25 per month starting January 1, 2006. Councilman, Chandler seconded the motion. Motion passed.

Councilman, Chandler made a motion to accept the new budget for 2006 with the new revises in garbage revenue/expenses and the hiway revenue/expenses as stated by City Administrator, Terri Herbert. Councilman, Myers seconded the motion. Motion passed.

Councilman, Myers made a motion to reimburse City Judge, Dwight Kalash, for his mileage, meals and motel in Bismarck, ND for the Judicial Conference. Councilman, Lander seconded the motion. Motion passed.

Dan and Don Larrabee were present to talk to the council about the finishing of the Welcome to Thompson Sign Dan Larrbee built as a community project. He will meet with the Mayor and Councilmen to present the sign to the city on Tuesday evening, October 11, 2005.

Councilman, Myers made a motion to adjourn the meeting. Councilman, Chandler seconded the motion. Motion passed.
City Auditor
(March 2, 2006)

CITY OF THOMPSON
COUNCIL MEETING
January 9, 2006

The regular meeting of the City Council, City of Thompson, County of Grand Forks, ND was held January 9, 2006 at 7:00 p.m. Mayor Larimer, Councilman Lander, Chandler and Wilhelmi were present. Councilman Myers was absent. Council approved the minutes of the previous meeting for December 12, 2005 with a motion by Councilman Chandler and a second by Councilman Lander. Council approved the financial report with a motion by Councilman Lander and a second by Councilman Wilhelmi. Council approved the payment of bills with a motion by Councilman Lander and a second by Councilman, Wilhelmi.

Next regular meeting will be held on February 6, 2006 at 7:00 p.m.

"Any Individual requiring special accommodations (i.e., alternative formatting of literature, an interpreter, or help in accessing the facility) should advise the City by contacting the City Auditor, Thompson City Office, Post Office Box 266, Thompson, ND. Phone: 701-599-2973. Requests should be made seven (7) days prior

Public Notices

and commonly known as Good Friday.
5. The last Monday in May, which is Memorial Day.
6. The fourth day of July, which is the anniversary of the Declaration of Independence.
7. The first Monday in September, which is Labor Day.
8. The eleventh day of November, which is Veteran's Day.
9. The fourth Thursday in November, which is Thanksgiving Day.
10. The twenty-fifth day of December, which is Christmas Day.
11. Every day appointed by the President of the United States or by the governor of this state for a public holiday.

If the first day of January, the fourth day of July, the eleventh day of November, or the twenty-fifth day of December falls upon a Sunday, the Monday following shall be the holiday. If any of these holidays fall on a Saturday, the Friday immediately before shall be the holiday. (NDCC 1-03-01)

Eligible employees for the City of Thompson are defined as any Regular Full-Time (work week of not less than 40 hours) or Regular Part Time (occupants of positions that are approved and budgeted with no specific duration of employment). Regular Full-Time employee holiday pay will reflect 8 hours (40 hours/5 work days). Regular Part Time employee holiday pay will be prorated based on specified work week hours. (example: employee schedule not to exceed 20 hours, would be paid 4 hours for each holiday (20 hours/5 work days)

Motion was seconded by Councilman Wilhelmi. Motion passed.

Mayor Larimer read the first reading of the Resolution for Salaries of City Officials. It read as follows:

RESOLUTION

BE IT ORDAINED by the City Council of the City of Thompson, State of North Dakota, that Section 1.0604 of Article 6 of Chapter I of the Ordinances of the City of Thompson be revised by amending Section 1.0604 as follows:

1.0604 Salaries of City Officials and Appointed Officers

A. The Salary of City Officials and Appointed Officers except as otherwise provided by law, shall be in such sums and amounts as may be, by resolution of the governing body, fixed from time to time.

B. The pay for the City Council members and Mayor shall be as follows: City Council members shall receive the sum of $31.25 per month plus $31.25 per regular monthly meeting attended and $10.00 per any special meeting attended by said council member. The Mayor shall receive the sum of $156.00 per month. Payment for Council Members and the Mayor shall be made by the last business day of the year. This pay schedule is effective beginning January 1, 2006.

First Reading: January 9, 2006
Second Reading: February 6, 2006
Adopted: February 6, 2006
CITY OF THOMPSON
By: Dean Larimer, Its Mayor
ATTEST: Barb Robinson, Its City Auditor

Councilman Chandler made a motion to adjourn the meeting. Councilman, Lander seconded the motion. Motion passed.
City Auditor
(March 2, 2006)

CITY OF THOMPSON
COUNCIL MEETING
December 12, 2005

The regular meeting of the City Council, City of Thompson, and County of Grand Forks, ND was held December 12, 2005 at 7:00 p.m. All members present except Robert Myers. Council approved the minutes of the previous meeting for November 7 and November 14, 2005 with a motion by Councilman, Lander and a second by Councilman, Chandler. Council approved the financial report with a motion by Councilman, Chandler and a second by Councilman, Lander. Council approved the payment of bills with a motion by Councilman, Lander and a second by Councilman, Wilhelmi.

Next regular meeting will be held on Monday, January 9, 2006 at 7:00 p.m.

"Any Individual requiring special accommodations (i.e., alternative formatting of literature, an interpreter, or help in accessing the facility) should advise the City by contacting the City Auditor, Thompson City Office, Post Office Box 266, Thompson, ND. Phone: 701-599-2973. Requests should be made seven (7) days prior to meeting."

Councilman, Lander made a motion to ap-

Public Notices

lations, restrictions or boundaries of the city of Grand Forks:
To amend the text of the Land Development Code, Chapter XVIII, of the Grand Forks City Code of 1987, as amended, amending Article 1, Planning and Zoning Commission, Section 18-0101, Appointment; Membership; Article 2, Zoning, Section 18-0202, Territorial Jurisdiction of Zoning Regulations; Article 8, Comprehensive Plan, Section 18-0801, Statement of Intent; and Article 9, Subdivision Regulations, Section 18-0902, Territorial Jurisdiction; Subdivision Regulations; relating to the designation of extraterritorial zoning and subdivision jurisdiction and the exercise of the City's authority therein.
Pursuant to Sections 40-47-04 and 40-47-05 of the North Dakota Century Code, as amended, and Section 18-1001 of the Grand Forks City Code of 1987, as amended, notice is hereby given that on the 20th day of March, 2006, in the council chambers in the City Hall in the city of Grand Forks, North Dakota, at the hour of 7:00 o'clock p.m., a public hearing will be held by the city council of the city of Grand Forks, at which time all citizens and interested parties will have an opportunity to be heard upon the aforementioned changes. Copy of said proposed change in regulation, restriction or boundary as hereinbefore described is available to the public for inspection and/or copying at the office of the city auditor in City Hall.
Dated: February 22, 2006.

John M. Schmisek
City Auditor
(February 25 & March 4, 2006)

NOTICE OF PUBLIC HEARING AMENDING OF ZONING ORDINANCE

Notice to the public is hereby given that the city council proposes to amend the Zoning Ordinance of the city of Grand Forks, North Dakota, to make the following changes in zoning regulations, restrictions or boundaries of the city of Grand Forks:
To amend the text of the Land Development Code, Chapter XVIII, of the Grand Forks City Code of 1987, as amended, amending Article 2, Zoning; Section 18-0217 B-4 (Central Business) District, subsection (3) Conditional Uses; Section 18-0216 B-3 (General Business) District, subsection (3) Conditional Uses; Section 18-0218 I-1 (Light Industrial) District, subsection (3) Conditional Uses; and Section 18-0219 (Heavy Industrial) District, subsection (3) Conditional Uses; all relating to indoor shooting galleries and ranges.
Pursuant to Sections 40-47-04 and 40-47-05 of the North Dakota Century Code, as amended, and Section 18-1001 of the Grand Forks City Code of 1987, as amended, notice is hereby given that on the 20th day of March, 2006, in the council chambers in the City Hall in the city of Grand Forks, North Dakota, at the hour of 7:00 o'clock p.m., a public hearing will be held by the city council of the city of Grand Forks, at which time all citizens and interested parties will have an opportunity to be heard upon the aforementioned changes. Copy of said proposed change in regulation, restriction or boundary as hereinbefore described is available to the public for inspection and/or copying at the office of the city auditor in City Hall.
Dated: February 22, 2006.

John M. Schmisek
City Auditor
(February 25 & March 4, 2006)

NOTICE OF PUBLIC HEARING TO AMEND THE STREET AND HIGHWAY PLAN OF THE CITY OF GRAND FORKS TO INCLUDE THE PUBLIC R/W SHOWN AS DEDICATED ON THE PLAT OF SOUTHERN ESTATES 5TH ADDITION

Notice to the public is hereby given that the city council proposed to amend the Street and Highway Plan of the city of Grand Forks to include the streets and public rights of way shown as dedicated on the plat of Southern Estates 5th Addition to the city of Grand Forks, North Dakota (located west of South 20th Street between the Southend Drainway and 43rd Avenue South).
Pursuant to Section 40-48-16 of the North Dakota Century Code, as amended, notice is hereby given that on the 20th day of March, 2006, in the council chambers in the City Hall in the city of Grand Forks, North Dakota, at the hour of 7:00 o'clock p.m. a public hearing will be held by the city council of the city of Grand Forks, at which time all citizens and interested parties will have an opportunity to be heard upon the aforementioned proposal.
Dated: February 22, 2006

John M. Schmisek
City Auditor
(February 25 & March 4, 2006)

ADVERTISEMENT FOR CONSTRUCTION BIDS

Sealed bids for the construction of 2006 Watermain Replacement, Project No. 5840-01 & 5840-02, will be received until 2:00 p.m. on Monday, March 20, 2006, at the office of the Director of Finance and Administrative Services in City Hall, 255 N. 4th St., in the City of Grand Forks, North Dakota, at which time and place they will be publicly opened and read. Project scope of work includes the following approximate quantities:
5,000 LF of 8" pvc watermain, valves, fire hydrants and appurtenances, 3,200 SY of sod restoration and miscellaneous pavement and sidewalk restoration.
Each bid must be accompanied by a separate envelope containing an acceptable bidder's bond in a sum equal to five percent of the full amount of the bid, executed by the bidder as principal and by a surety, conditioned that if the principal's bid be accepted and the contract awarded to the principal, the principal, within ten days after notice of award, will execute a contract in accordance with the term of the bid and a contractor's bond as required by law and the regulations and determinations of the Grand Forks City Council.
Each bid shall contain a copy of the license or certificate of renewal thereof issued by the secretary of state enclosed in the required bid bond envelope. Bidder must be licensed for the full amount of the bid. No bid will be read or considered which does not fully comply with the above provisions as to bond and license.
The City Council reserves the right to reject any or all bids and/or to waive any informality in the bids received and to accept any bid deemed to be most favorable to the interest of the City of Grand Forks. The work, if awarded, shall be completed by October 1, 2006.
Copies of the contract documents, including plans, specifications, bidding instructions, and proposals may be seen at the office of the Grand Forks City Engineer, (701-746-2640) 255 North 4th St., P. O. Box 5200, Grand Forks, North Dakota 58206. Plans and proposal documents may be purchased for a non-refundable fee of $40.00 per set.
John M. Schmisek
Director of Finance & Administrative Services
(February 25, March 4 & 11, 2006)

Air Force Base Public Notice

Grand Forks Air Force Base has proposed the landscaping of multiple areas throughout the base, known as the "Green Plan".
An environmental assessment has been conducted and a finding of no significant impact has been determined for this action.
Anyone wishing to view the support documents to this action should contact the 319th Air Refueling Wing Public Affairs Office within the next 30 days at 747-5017 or 747-5608.
(March 2 & 4, 2006)

PUBLIC NOTICE
The Grand Forks Growth Fund will hold a public hearing regarding the proposed LM Glasfiber Expansion Project. The hearing will be on Monday, March 6, 2006, at 7:00 p.m. in the Council Chambers at City Hall, 255 North 4th Street. Information on the proposed project is available at the Office of Urban Development, 1405 1st Avenue North, Grand Forks, ND 58203; phone (701)746-2545. Hearing impaired TDD phone number is 711. Alternate formats or special accommodations are available upon request for persons with disabilities.
(March 4, 2006)

NOTICE TO THE PUBLIC

Pursuant to Section 2(a) (2) of Executive Order 11988, the City of Grand Forks gives notice that the Office of Urban Development is undertaking the following projects:

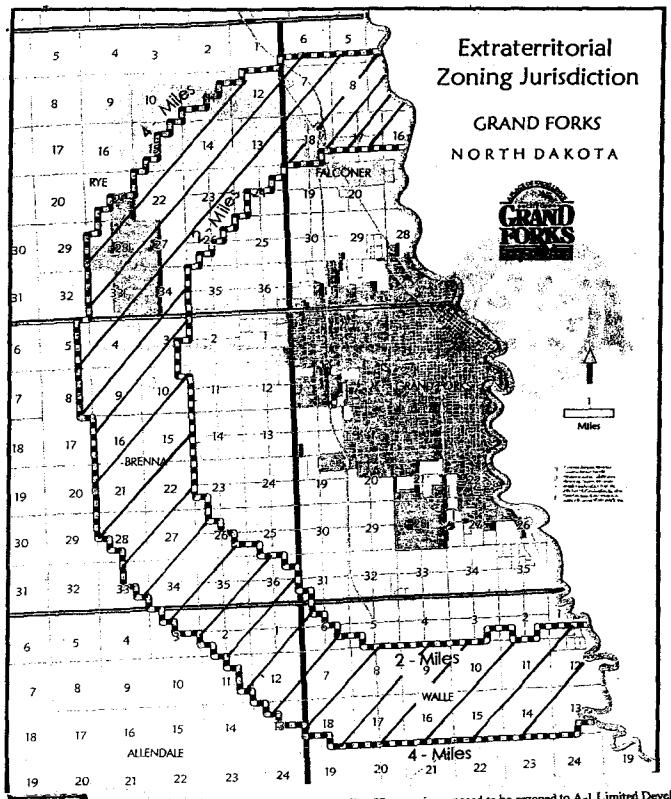
Project	Location	Amount
Shelter For Homeless, Inc	420 Division Avenue	$170,000

NOTICE OF PUBLIC HEARING AMENDING OF ZONING ORDINANCE

Notice to the public is hereby given that the city council proposes to amend the zoning ordinance of the city of Grand Forks, North Dakota, to make the following changes in zoning regulations, restrictions or boundaries of the city of Grand Forks:

To amend the Zoning Map of the city of Grand Forks, established by Section 18-0205(2), of the Grand Forks City Code of 1987, as amended, is hereby amended as follows:

To extend the extraterritorial zoning jurisdiction to four (4) miles beyond corporate limits and to rezone to the A-1 (Limited Development) Districts all those lands lying between two (2) miles and four (4) miles of the corporate limits as shown on the map attached hereto.



Proposed area of expansion from two to four miles. The area is proposed to be rezoned to A-1 Limited Development District.

Pursuant to Sections 40-47-04 and 40-47-05 of the North Dakota Century Code, as amended, and Section 18-1001 of the Grand Forks City Code of 1987, as amended, notice is hereby given that on the 20th day of March, 2006, in the council chambers in the City Hall in the city of Grand Forks, North Dakota, at the hour of 7:00 o'clock p.m., a public hearing will be held by the city council of the city of Grand Forks, at which time all citizens and interested parties will have an opportunity to be heard upon the aforementioned changes. Copy of said proposed change in regulations, restriction or boundary as hereinbefore described is available to the public for inspection and/or copying at the office of the city auditor in City Hall.

Dated: February 22, 2006.

John M. Schmisek
City Auditor

(February 25 & March 4, 2006)

NOTICE OF MEDIATION

TO: City of Grand Forks, All Protestors to the Proposed Annexation, Grand Forks County, Grand Forks Township, and Any other Persons having an Interest in the Proposed Annexation

PLEASE TAKE NOTICE that the City of Grand Forks has adopted a Resolution of Annexation, a copy of which is attached hereto. Also attached is an Annexation Plat of the area proposed to be annexed.

Protests to the annexation were filed by landowners representing more than one-fourth of the territory to be annexed. Pursuant to North Dakota Century Code 40-51.2-07.1, the City of Grand Forks requested the appointment of a mediator by the Governor of the State of North Dakota to resolve this annexation dispute. The undersigned has been appointed mediator by the Governor.

YOU ARE HEREBY NOTIFIED that the mediation of this annexation dispute will occur on March 14, 2006, beginning at 9 a.m. at the Grand Forks City Hall, 255 North Fourth Street, Grand Forks, North Dakota. The mediation will continue until a resolution agreeable to all parties is reached or the mediator determines that continued mediation is no longer worthwhile. Pursuant to North Dakota Century Code 40-51.2-07.1, the City of Grand Forks, the protestors to the annexation, Grand Forks Township, Grand Forks County, and any other persons having an interest in the proposed annexation may attend the mediation.

Dated this 22nd day of February, 2006.

Wing calendar coming online soon

In an effort to improve awareness base community activities and to he eliminate scheduling conflicts the wi will develop an intranet based calend

"The activation date for the calend is expected to be April 1," said Mr. C Marhula. Other avenues of commu cation outlined in the public affa communication toolkit are still availal and can continue to be used. "T Calendar is an additional communic tion tool," said Mr. Marhula. To acc the toolkit visit https://private.grandforks.amc.af.m Units/DS/pa/Internal%20Communi tion%20Toolkit.doc or request via pu lic affairs by sending an email PA@grandforks.af.mil. The calend will be available on the wing's intran

de a form d submit to events. The n will also he commu- to use for will be able alendar and lered before vent. Other hey have a

, the goal is ion in the information ast surveys n is an area is only one seful infor- at the right

Environmental notice

Grand Forks Air Force Base has proposed the landscaping of multiple areas throughout the base, known as the "Green Plan."

An environmental assessment has been conducted and a finding of no significant impact has been determined for this action.

Anyone wishing to view the support documents to this action should contact the 319th Air Refueling Wing Public Affairs Office within the next 30 days at 747-5017 or 747-5608.

USA Jr. Olympic Skills looking for competitors

The USA Jr. Olympics Skills Competition is Saturday from noon to 4 p.m. at the Center Court Fitness Club in Grand Forks, N.D. The cost is free.

Girls and boys between the ages of eight and 13 must show their birth certificate or other proof of age in order to compete.

There are three levels of competition with this being the first. If a child qualifies, they move on to the regional level and perhaps even earn a trip to the U.S. Olympic Training Center in Colorado Springs, Colo., in August. Competitions include basketball, track and field, soccer and tennis. Children can compete in as many events as they choose.

For more information call Hayley at (701) 306-8997, Mike at (701) 746-2790 or Coach Anthony at 747-3150.

More information is available on the Web at:

www.usolympicteam.com/JOSkills. You can register ahead of time or show up at the door

Ellsworth USFWS to ceva-27Mar06-no impact.txt

From: Terry_Ellsworth@fws.gov
Sent: Monday, March 27, 2006 9:29 AM
To: Strom Diane Civ 319 CES/CEVA
Cc: Jeffrey_Towner@fws.gov
Subject: Draft Report Environmental Assessment: Landscape Multiple Areas at Grand Forks Air Force Base

Dear Diane,

The Service has reviewed the subject report and finds that the project as described will have no significant impact on fish and wildlife resources.
No endangered or threatened species are known to occupy the project area.
If project design changes are made, please submit plans for review.

Terry Ellsworth
North Dakota Ecological Services Field Office
3425 Miriam Avenue
Bismarck, ND 58501

Office (701) 355-8505
Fax (701) 355-8513
Terry_Ellsworth@fws.gov

From: Schumacher, John D. [jdschumacher@state.nd.us]
Sent: Friday, March 17, 2006 10:11 AM
To: Strom, Diane Civ 319 CES/CEVA
Subject: RE: Request for Review of EA and FONSI for Landscaping of Multiple Areas

The North Dakota Game and Fish Department has reviewed this project for wildlife concerns. We do not believe it will have any significant adverse affects on wildlife or wildlife habitat, including endangered species, provided any impacts to wetland areas are avoided or mitigated.

Sincerely,
John Schumacher
Resource Biologist
NDGFD
jdschumacher@nd.gov

From: Strom, Diane Civ 319 CES/CEVA [mailto:Diane.Strom@grandforks.af.mil]
Sent: Monday, February 27, 2006 12:50 PM
To: Boyd, James R.; Leier, Joleen M.; McMahon, Carole B.; jeffrey_towner@fws.gov; Picha, Paul R.; Steinwand, Terry R.; Swenson, Fern E.; Cain, Cindy C.; Glatt, Dave D.; Marie_Nelson@fws.gov; Paaverud, Merl E.; Knudtson, Larry J.; Dyke, Steve R.; Dwelle, Terry L.
Subject: Request for Review of EA and FONSI for Landscaping of Multiple Areas

The U.S. Air Force is preparing an environmental assessment (EA) on the landscaping of multiple areas, known as the "Green Plan". Attached is a copy of the draft EA and FONSI. Please review the document and identify any additional resources within your agency's responsibility that may be impacted by the action. Comments should be sent to me at the address below.

Your assistance in providing information is greatly appreciated. If you have any questions, please call the number below.

If the 9 MB pdf file is too large, let me know, so we can discuss an alternative.

Sincerely,
Diane M. Strom
Environmental Impact Analysis Program
319 CES/CEVA, Room 128
525 Tuskegee Airmen Blvd
Grand Forks AFB ND 58205-6434
Phone (701) 747-6394
FAX (701) 747-6155
Diane.Strom@grandforks.af.mil

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EQUAL HOUSING OPPORTUNITY

February 27, 2006

Diane M. Strom
Dept. of the Air Force
319 CES/CEVA, Room 128
525 Tuskegee Airmen Blvd.
Grand Forks AFB, ND 58205-6434

"Letter of Clearance" In Conformance with the North Dakota Federal Program Review System - State Application Identifier No.: ND060227-0060

Dear Ms. Strom:

SUBJECT: FONSI - Landscape Multiple Areas "Green Plan" at Grand Forks AFB

The above referenced FONSI has been reviewed through the North Dakota Federal Program Review Process. As a result of the review, clearance is given to the project only with respect to this consultation process.

If the proposed project changes in duration, scope, description, budget, location or area of impact, from the project description submitted for review, then it is necessary to submit a copy of the completed application to this office for further review.

We also request the opportunity for complete review of applications for renewal or continuation grants within one year after the date of this letter.

Please use the above SAI number for reference to the above project with this office. Your continued cooperation in the review process is much appreciated.

Sincerely,

James R. Boyd
Manager of Governmental Services
Division of Community Services

cmw

Rec 3 Mar 06

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

March 3, 2006

Ms. Diane Strom
Environmental Impact Analysis Program
319 CES/CEVA, Room 128
525 Tuskegee Airmen Blvd.
Grand Forks AFB, ND 58205-6434

Re: Draft Environmental Assessment for Landscaping Various Areas at Grand Forks Air Force Base, Grand Forks County

Dear Ms. Strom:

This department has reviewed the information concerning the above-referenced project submitted under date of February 27, 2006, with respect to possible environmental impacts.

1. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner.

2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.

3. Projects disturbing one or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. Further information on the storm water permit may be obtained from the Department's website or by calling the Division of Water Quality (701-328-5210). Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

4. Noise from construction activities may have adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Noise

Rec 8 Mar 06

effects can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

March 1, 2006

Ms. Diane M. Strom
Environmental Impact Analysis Program
319 CES/CEVA, Room 128
525 Tuskegee Airmen Blvd.
Grand Forks AFB ND 58205-6434

ND SHPO Ref.:97-0527BF Request for Review of EA and FONSI for Landscaping of Multiple Areas

Dear Ms. Strom,

We reviewed ND SHPO Ref.:97-0527BF Request for Review of EA and FONSI for Landscaping of Multiple Areas. We find that paragraph 3.8 Cultural Resources on page 38 is correct and that Figure 3.5 is correct.

However, is there a report or survey of buildings 313, 606, 703, 704, 705, 706, 707 and 714? I can find no photographs or other information on these buildings in our site files or manuscript files.

Thank you for the opportunity to review this EA and FONSI. If you have any questions please contact Susan Quinnell, at (701) 328-3576, e-mail squinnell@state.nd.us

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)

North Dakota Heritage Center • 612 East Boulevard Avenue, Bismarck, ND 58505-0830 • Phone 701-328-2666 • Fax: 701-328-3710
Email: histsoc@state.nd.us • Web site: http://www.nd.gov/hist• TTY: 1-800-366-6888

Rec 6 Mar 06

Strom, Diane Civ 319 CES/CEVA

From: Quinnell, Susan L. [squinnell@state.nd.us]
Sent: Monday, March 06, 2006 4:25 PM
To: Strom, Diane Civ 319 CES/CEVA
Subject: RE: Cold War Era Facilities

Hello Diane,

Many thanks for the .pdfs. Now I have everything I need. I believe the large reports are already in our permanent archives. Thanks again.

Susan Quinnell
Review and Compliance Coordinator
State Historical Society of North Dakota
North Dakota Heritage Center
612 East Boulevard Avenue
Bismarck, ND 58505-0830

701/328-3576
701/328-3710 FAX

From: Strom, Diane Civ 319 CES/CEVA [mailto:Diane.Strom@grandforks.af.mil]
Sent: Monday, March 06, 2006 3:53 PM
To: Quinnell, Susan L.
Subject: Cold War Era Facilities

Susan,
I received your letter today regarding the EA and FONSI for Landscaping of Multiple Areas. You question a report or survey of buildings 313, 606, 703, 704, 705, 706, 707, and 714. You can find no photographs or other information on these buildings in your site files or manuscript files.
Enclosed is a document detailing our potentially eligible buildings. I hope this document is helpful.

Sincerely,
Diane M. Strom
Environmental Impact Analysis Program
319 CES/CEVA, Room 128
525 Tuskegee Airmen Blvd
Grand Forks AFB ND 58205-6434
Phone (701) 747-6394; DSN 362-6394
FAX (701) 747-6155; DSN 362-6155
Diane.Strom@grandforks.af.mil

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 319TH AIR REFUELING WING (AMC)
GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

29 March 2006

MEMORANDUM FOR 319 CES/CEVA

FROM: 319 ARW/JA

SUBJECT: Legal Review – Grand Forks AFB Environmental Assessment and FONSI for Landscaping of Multiple Areas, known as the "Green Plan".

1. Based upon my review the proposed Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) complies with 32 CFR part 989 and is legally sufficient.

2. 32 CFR §. 989.14 states an EA must discuss the need for the proposed action, reasonable alternatives to the proposed action, the affected environment, the environmental impacts of the proposed action and alternatives (including the ``no action" alternative), and a listing of agencies and persons consulted during preparation. The EA meets these requirements and follows the alternatives analysis guidance outlined in Sec. 989.8.

3. If you have any questions about these comments, please contact the undersigned at 7-3606.

MARK W. HANSON, GS-12, DAF
Chief, General Law